PRACTICAL SURGERY ILLUSTRATED

By VICTOR PAUCHET

Translated by F R. B ATKINSON M D, C.M (*Edin Univ*) *With an Introduction by* SIR CHARLES GORDON-WATSON, C M G, F R.C S., *Surgeon and Joint-Lecturer in Surgery, St Bartholomew's Hospital*

VOLUME TWO



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GENERAL INTRODUCTION

The reputation of Victor Pauchet as a bold and brilliant surgeon stands high in Paris

"Practical Surgery Illustrated,' translated into English by Dr F R B Atkinson, cannot fail to enhance that reputation, and will enable English surgeons to study Pauchet's methods in detail with both pleasure and profit

Practical Surgery Illustrated makes no claim to be a text-book of operative surgery It claims rather to illustrate operations as practised by the author, and these claims are well substantiated The illustrations are drawn from life, the text explains them The author presents his methods in a series of living pictures in a manner which should appeal to the practical surgeon

English surgeons will note with interest that local, spinal, and splanchnic anæsthesia have practically supplanted general anæsthesia in Victor Pauchet s practice

C GORDON WATSON

September 1924

INTRODUCTION TO VOLUME II

THE volume opens with a description of **cerebellar decompression** under local anæsthesia for the treatment of a tumour of the auditory nerve The author employs a perforator and Gigli's saw The illustrations are exceptionally clear

Treatment of **cancer of the cervix**, both by radium and by operation, is discussed fully Radium is employed before operation and not after Faure's method of operating is described by Faure himself

H Rubens-Duval discusses the treatment of cancer of the uterus with radium under the title of **Curietherapy**, and argues that the curative value of radium is at least equal to that of surgery, and holds that "as it requires neither operation nor even anæsthesia, it should be the treatment of choice"

The treatment of **fibroids and fibroma complicated with pregnancy at term** is discussed, and the indications for X rays, radium, myomectomy hysterectomy, carefully considered

The author holds that modern vaginal hysterectomy is indicated in women suffering from cardiac insufficiency, the obese or the plethoric, with not very large fibromata In abdominal hysterectomy the pedicles on either side (ovarian and round ligament) are fixed to the cervical stump to suspend the vagina and prevent cystocele

Nephrectomy for cancer of the kidney is carried out by means of a transverse incision and a combination of the intra- and extra peritoneal route

Suprapubic **prostatectomy** is described in two stages, and the perineal operation is illustrated by cinematograph pictures Luys method of drilling the prostate with galvano-cautery is advocated for small adenomata and in debilitated subjects in whom prostatectomy appears too dangerous This is carried out without an anæsthetic and repeated weekly for five or six times

The two-stage method of prostatectomy is supported by the

dictum that it is better to cure a patient in three months than to kill him in three days

Total extirpation of the stomach *for carcinoma is described* The œsophagus is united end to side into the jejunum, and a jejuno jejunostomy is also carried out to prevent regurgitation of bile into the *œsophagus*

The author holds that **gastro-enterostomy** in **Y** is the *most rational* operation for **duodenal ulcer**

The author s clamp for the stomach in hemi-gastrectomy should be noted, and also the use of Judd s forceps for the hæmostatic through and through suture of the gastro jejunal edge

Complete colectomy is recommended for **congenital mega-colon** in the majority of cases, and is considered to be an easier and milder operation than partial colectomy

At the conclusion of the volume the operative treatment of **cancer of the rectum** is further discussed, and surgeons will find both the abdomino perineal and the perineal operation very fully illustrated The author s method of performing colostomy *is original* the bowel is divided, the upper end is given a half twist and brought through the rectus, and the lower end is fixed to the surface outside the rectus

Radium is advocated for all inoperable cases, and is recommended also in operable cases

The *author, when making use of* the two-stage operation, per forms colostomy then inserts radium and carries out the perineal excision a month later

C GORDON WATSON

September 1921

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PRACTICAL SURGERY ILLUSTRATED

I

CRANIECTOMY FOR TUMOUR OF THE BRAIN

BY THIERRY DE MARTEL

CEREBRAL tumours are generally inoperable

For operation on a cerebral tumour to be possible, it is necessary

1 That the neurologist can localise it, by the symptoms it produces

2 That it be accessible visible and enucleable by the surgeon.

Tumours of the auditory nerve fulfil these two conditions

I will recall briefly what a tumour of the auditory nerve is Generally, it is a fibroma or a fibro-sarcoma developed in the auditory nerve or in its immediate vicinity

The tumour is most often the size of a nut or a horse-chestnut, at the time of operation and is situated in the angle formed by the pons, or rather by the middle cerebellar peduncle with the cerebellum.

During its development it compresses the fifth, sixth, seventh and eighth cranial nerves, the pons and the bulb

Compression of the fifth pair is frequent, and produces neuralgic pains in the region supplied by the trigeminus and anæsthesia of the same area The sensory symptom most easily observed, and perhaps also the most constant is abolition of the corneal reflex.

Compression of the sixth pair is frequent and produces internal strabismus

Compression of the seventh pair, which nearly always exists, usually gives rise to very few symptoms, so much so that it can be said, when marked facial paralysis is present, it is doubtful whether a tumour of the auditory nerve exists.

Compression of the eighth pair constant and very early (many years before the appearance of any other symptom), gives rise to two kinds of symptoms—cochlear and vestibular

The cochlear symptoms are buzzing in the ear and deafness,

the vestibular symptoms are vertigo, nystagmus modifications of the normal reaction by Barany's test, and to that of voltaic vertigo

During its development the tumour presses on the pons and on the cerebellum

Motor and sensory phenomena, hemi paresia, hemi anæsthesia, more or less marked, and cerebellar symptoms, latero-pulsion, cerebellar ataxia, adiadococinesia, hypotonia, etc , are then observed

Finally, as in all intra-cranial tumours, signs of hypertension, œdema of the papilla, headache and vomiting appear often early

The diagnosis is then often possible, when a patient affected with auditory symptoms for months or years is at the same time suffering from cerebellar symptoms and intra cranial hypertension

Tumours of the auditory nerve do not become adherent to neighbouring organs, save to the eighth pair, and are enucleable

They are also essentially surgical, and ought to be submitted to operation

The following is the method I adopt The drawings which accompany the text were taken from nature during an operation, and explain it clearly

The patient is placed straddle-legs in a chair He leans forward and his forehead rests on a cushion at the end of an operation table The arms and the back are fixed to the table Pachon's apparatus is fixed to one of the forearms A nurse, wearing aseptic gloves, is in charge of the head to hold it in a good position. This position admirably exposes the field of operation, hæmorrhage is reduced to a minimum and if syncope occur the patient is laid down

Anæsthesia —An hour before the operation 2 centigrammes of morphia and 1 milligramme of scopolamine are injected subcutaneously

Regional anæsthesia of the field of operation extending in breadth from one mastoid to the other, and from two fingers breadth above the external occipital protuberance to the third and fourth cervical spinous apophyses in length

This anæsthesia is obtained by a solution of novocaine 1/200

Owing to the local anæsthesia the patient assists the surgeon by movements which he carries out as requested During the operation he answers questions addressed to him and his condition is easily judged He does not vomit, and vomiting is a serious danger to a patient whose cerebellum is exposed

Cross bow cutaneous incision (Cushing) consisting of two branches

the one transverse from one mastoid to the other above the external occipital protuberance, and the other median, in the middle of the preceding to the fourth cervical spinous apophysis

Careful hæmostasis of the cutaneous lips, which are freed from the subjacent periostitic or aponeurotic surface (following the dots)

Incision following the same marks, on the deep surface peri osteum aponeurosis and muscles In the middle line, be careful to separate the muscles at the median raphe (hæmorrhage is thus avoided)

Reflect externally the two flaps thus mapped out, by separation by the raspatory of the muscles of the nuchæ During this separa tion division of the more or less large emissary veins Stop up the small emissary veins with Horsley's wax, and the large ones with osseous stitches.

Once the separation of the muscles is attained, the shell of the occipital bone is perfectly exposed from the external occipital protuberance to the occipital foramen. The bone must be laid bare below the superior curved line, in order to expose easily the whole extent of the lateral sinus

Trephine the bone and remove the shell of the occiput with gouge forceps rendered easy by drilling many approximate holes.

The division of the occipital crest ought to be made carefully in order not to wound the subjacent sinus

The external occipital protuberance can be left in place, but I find greater clearness is obtained after sawing it by two or three cuts of the saw

The parts surrounding the occipital foramen are to be widely destroyed At the end of this stage the dura mater will be seen covering the two lobes of the cerebellum, separated by a deep median ridge the lateral sinuses, and the torcula Herophili, the origin of the medullary dura mater

Before passing on to the following stage it is a good thing to let the arterial tension recover, it is not usually yet altered, but often becomes lowered at this time.

Incise very carefully the dura mater right to left of the occipital bone these incisions are afterwards enlarged and made into crucial ones.

Be careful not to wound the cerebellar pia mater Do not make this incision if the dura mater be very tense and the hypertension great In this case begin by puncturing the lateral ventricle

2 centimetres above the lateral sinus and 2 centimetres to the right or left of the longitudinal sinus.

This puncture immediately leads to collapse of the cerebellar dura mater, and afterwards the chances of a cerebellar hernia are much less

Catch and ligature the occipital sinus. Divide the falx cerebelli this is a very delicate stage

At this moment the cerebellum, the two lateral lobes and the middle vermiform process are freely exposed

Ask the patient to turn his head to the opposite side to that of the tumour The cerebellum falls away from this side, and the cerebellar fossa it is proposed to explore becomes accessible.

Put in a retractor and very gently pull back the cerebellum The tumour often appears partly hidden by serous cysts which are opened.

The petrous portion of the temporal bone, the tentorium cerebelli, and the tumour, generally yellowish and well circumscribed, surrounded by a vascular plexus, are visible. Sometimes the auditory and facial nerves are to be seen. Often, in these cases, the tumour is in the *pons or the cerebellum, and not in the auditory nerve.* The diagnosis has been wrong

Do not try to remove the tumour *en bloc* uncontrollable hæmorrhage will be produced Open the capsule carefully and empty the contents with a curette

Tampon the bed of the tumour with a small drain which passes out of the corner of the transverse incision Do not try to suture the dura mater, carefully suture the cutaneous incisions at two levels a deep layer of catgut, and a superficial one of silkworm gut Carefully apply a firm dressing

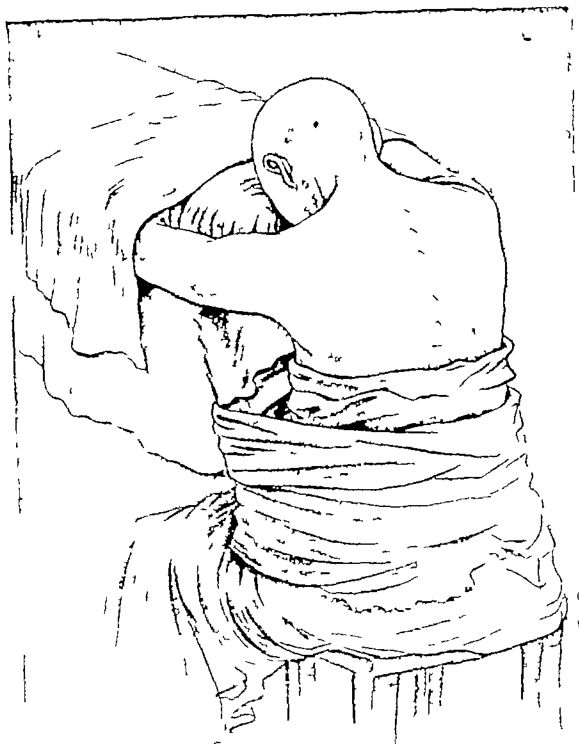


FIG 1 —CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

Patient in sitting position this position greatly reduces the hæmorrhage favours hæmostasis and excellently exposes the field of operation.

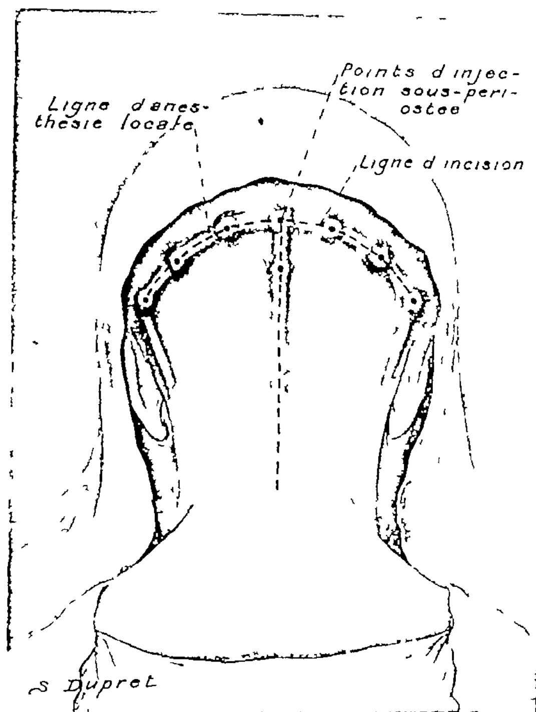


FIG 2.—CRANIECTOMY FOR CEREBRAL TUMOUR (THIERRY DE MARTEL)

Tracing of the cross bow incision (Cushing), which the anæsthetist will follow The transverse line ought to pass well above the occipital protuberance

Ligne d'anesthésie locale = Line of local anæsthesia. *Points d'injection sous-périostée* = Points of subperiosteal injection. *Ligne d'incision* = Line of incision.

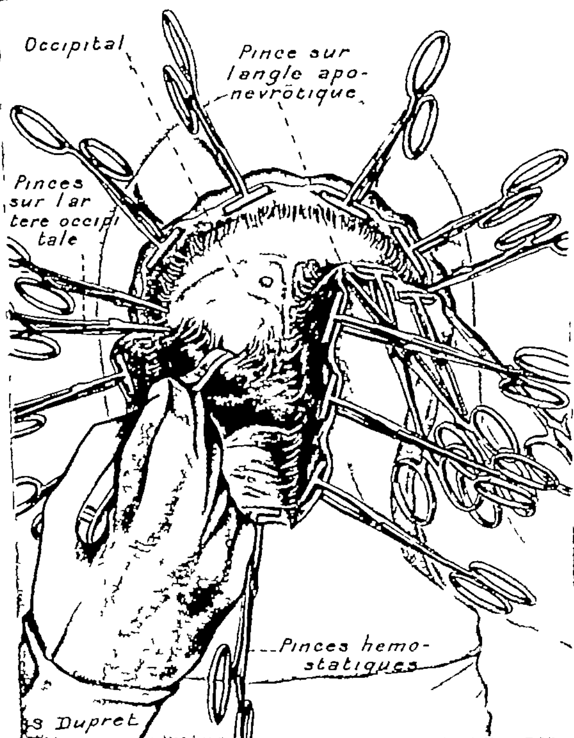


FIG 3.—CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

Incision of the soft parts at two levels the skin, then the aponeurosis and the muscles. Kocher's forceps mark out the angle of the aponeurotic incision, which, without them would be difficult to find at the end of the operation. The muscles are detached by the raspatory Some emissary veins are opened.

Occipital = Occipital bone. *Pince sur l'angle aponévrotique* = Forceps on the aponeurotic angle. *Pinces sur l'artère occipitale* = Forceps on the occipital artery *Pinces hémostatiques* = Arterial forceps.

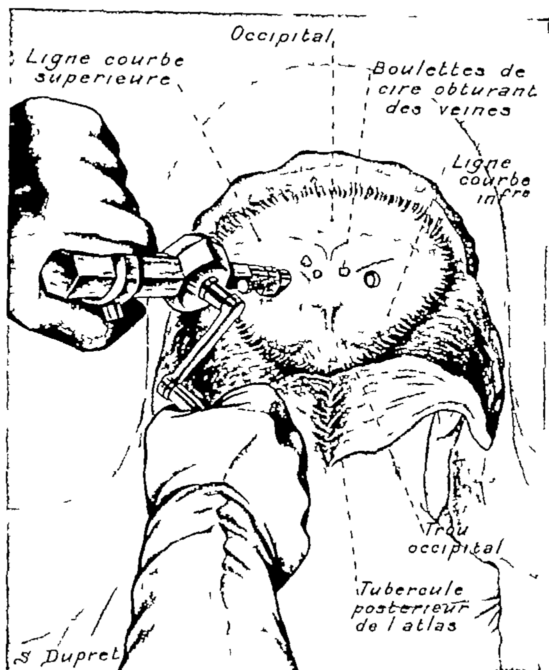


FIG 4 —CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)
Perforation of the skull with a hand perforator at two or three points.

Ligne courbe supérieure=Superior curved line. *Occipital*=Occipital bone. *Boulettes de cire obturant des veines*=Balls of wax plugging the veins. *Ligne courbe infre*=Inferior curved line. *Trou occipital*=Occipital foramen. *Tubercule postérieur de l'atlas*=Posterior tubercle of the atlas

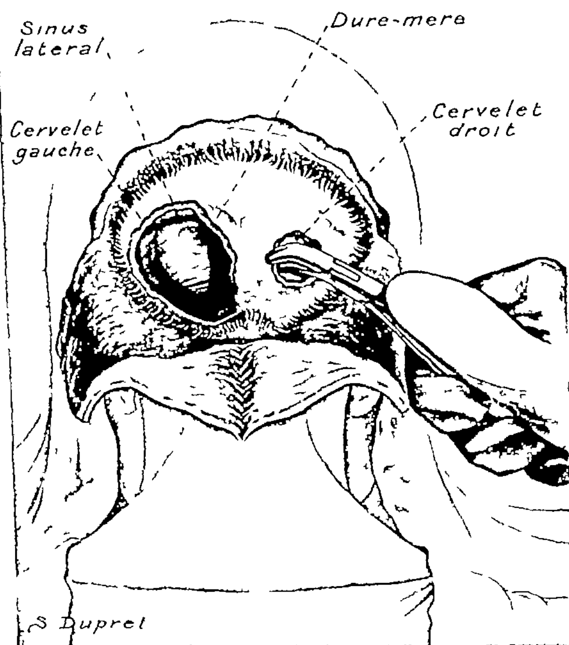


FIG 5.—CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)
The openings in the bone are united together by gouge forceps, care being taken to exercise no pressure on the dura mater

Sinus latéral=Lateral sinus *Dure-mère*=Dura mater *Cervelet gauche*=Left cerebellum *Cervelet droit*=Right cerebellum.

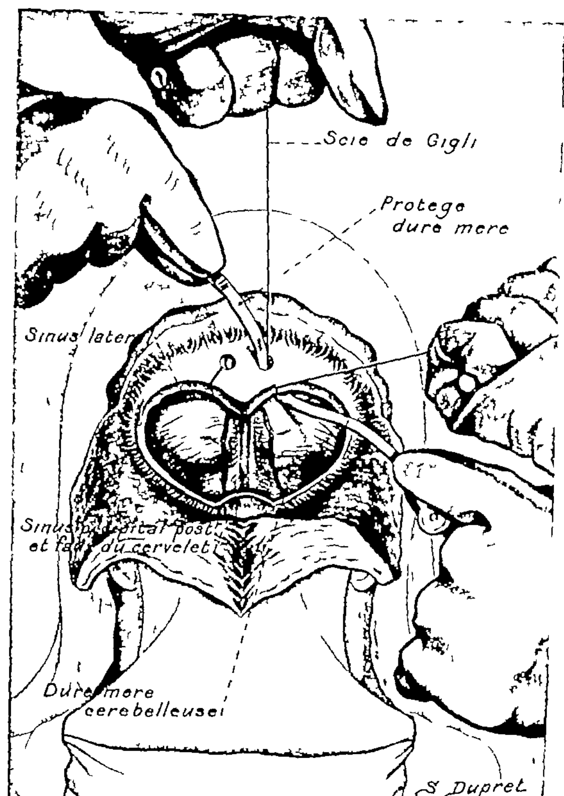


FIG 6—CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

The gouge forceps has rounded the lower border of the torcula herophili without being able to cut it Two openings are drilled by the trephine above the torcula which is detached *en bloc* by Gigli's saw passed with the help of the dura mater retractor which left in position, protects the dura mater from the saw

Scie de Gigl = Gigli's saw *Protège dure mère* = Protects the dura mater *Sinus latéral* = Lateral sinus. *Sinus occipital postr et faux du cervelet* = Posterior occipital sinus and falx cerebelli. *Dure mère cérébelleuse* = Cerebellar dura mater

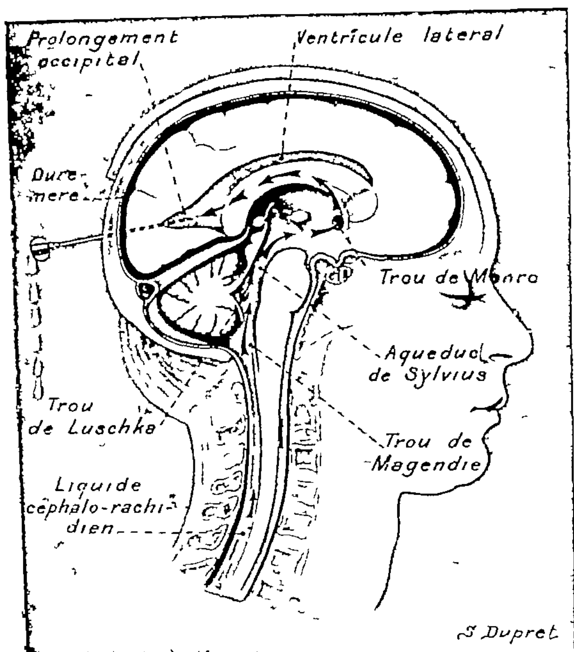


FIG 7 —CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

Puncture of the ventricle through the operation wound to diminish the intra-cranial tension and to prevent a hernia of the encephalon into the wound.

Prolongement occipital = Occipital prolongation. *Ventricule latéral* = Lateral ventricle. *Dure-mère* = Dura mater *Trou de Monro* = Foramen of Munro. *Aqueduc de Sylvius* = Aqueduct of Sylvius. *Trou de Luschka* = Luschka s foramen. *Trou de Magendie* = Foramen of Magendie. *Liquide céphalo-rachidien* = Cerebro-spinal fluid

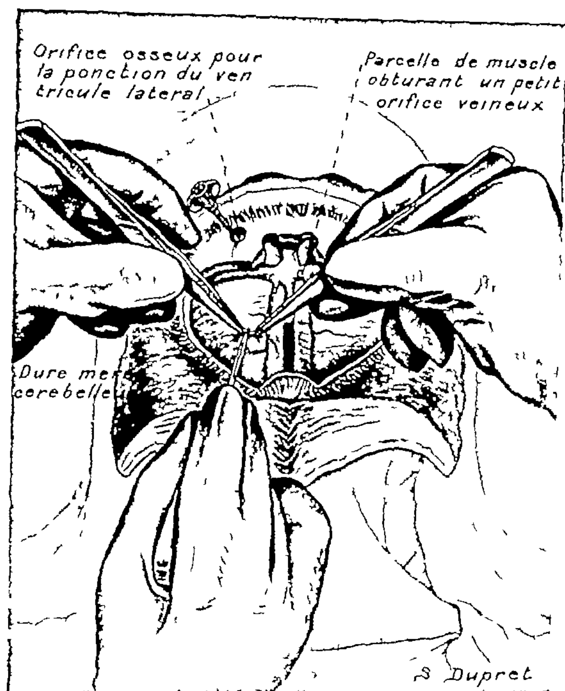


Fig 8 —Craniectomy for Cerebral Tumour. (Thierry de Martel.)

The cerebellar dura mater is opened with great care to the right and left of the middle line *Be careful not to wound the pia mater On incising the pia mater* the cerebellum escapes like pulp through the incision.

Orifice osseux pour la ponction du ventricule latéral=Opening in the bone for puncturing the lateral ventricle. *Parcelle de muscle obturant un petit orifice veineux*=Piece of muscle plugging a small venous opening. *Dure mère cérébelleuse*=Cerebellar dura mater



FIG 9 —CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

The incision in the dura mater is enlarged by the grooved director

Dure mère cérébelleuse = Cerebellar dura mater. *Pressoir d'Hérophile* = Torcula Herophili. *Tubercule postérieur de l'atlas* = Posterior tubercle of the atlas *Occipital* = Occipital bone

Dure-mère = Dura mater *Lignes d'incision de la dure mère* = Lines of incision of the dura mater. *Cervelet découvert* = Cerebellum exposed. *Cervelet* = Cerebellum. *Sinus occipital et faux du cervelet* = Occipital sinus and falx cerebelli

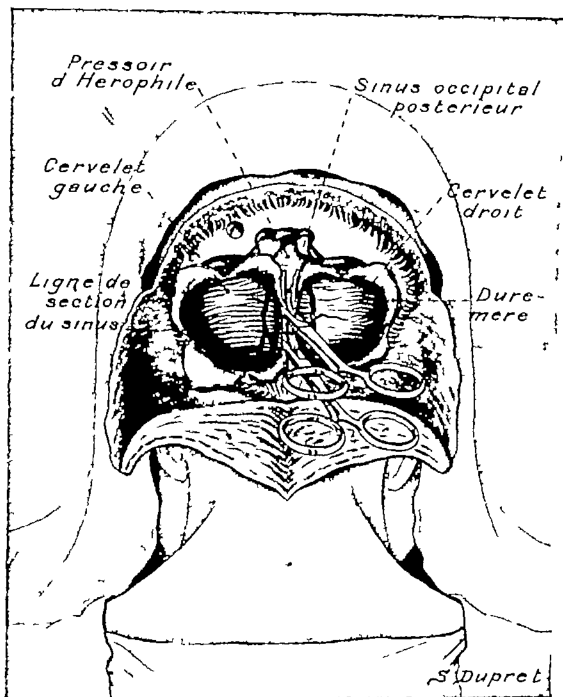


Fig 10.—Craniectomy for Cerebral Tumour. (Thierry de Martel.)

Division of the falx cerebelli and of the occipital sinus between two forceps.

Pressoir d'Hérophile = Torcula Herophili. *Sinus occipital postérieur* = Posterior occipital sinus. *Cervelet gauche* = Left cerebellum. *Cervelet droit* = Right cerebellum. *Ligne de section du sinus* = Line of division of the sinus. *Dure mère* = Dura mater

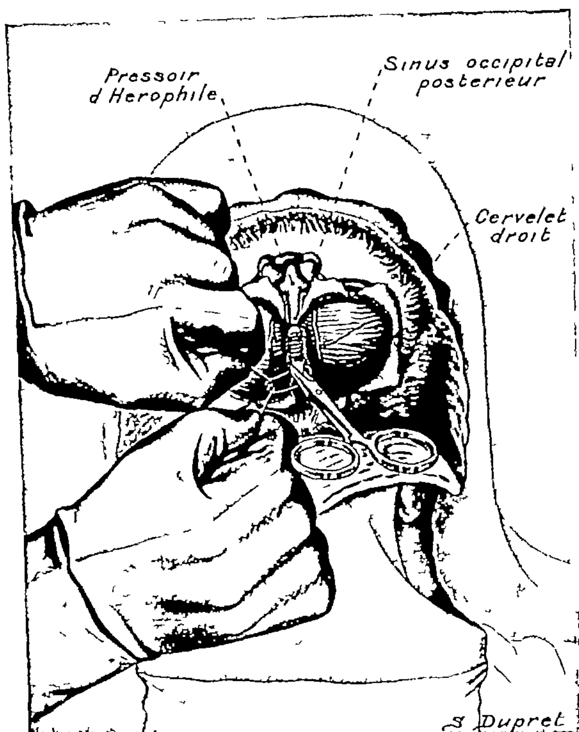


Fig 11.—Craniectomy for Cerebral Tumour. (Thierry de Martel.)

Ligature of the occipital sinus below the forceps. One of the most difficult stages of the operation.

Pressoir d'Hérophile = Torcula Herophili. *Sinus occipital postérieur* = Posterior occipital sinus *Cervelet droit* = Right cerebellum.

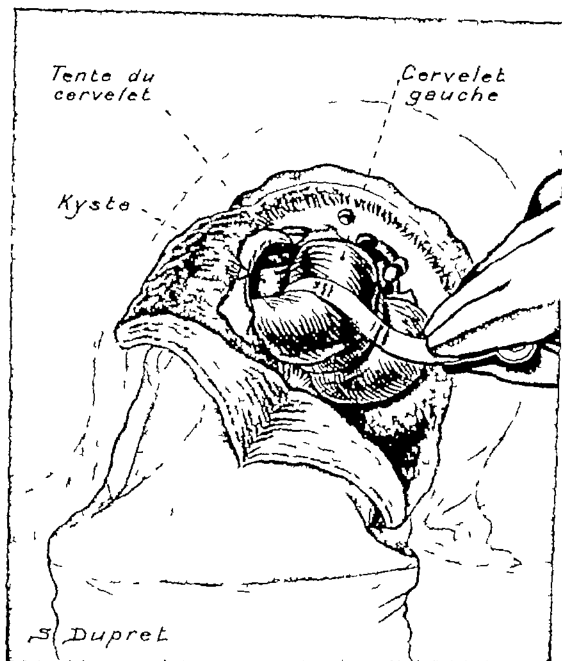


FIG 12.—CRANIECTOMY FOR CEREBRAL TUMOUR. (THIERRY DE MARTEL.)

The patient has been asked to bend his head to the right. The cerebellum falls away to this side exposing a cyst which hides the tumour

Tente du cervelet=Tentorium cerebelli *Cervelet gauche*=Left cerebellum *Kyste*=Cyst.

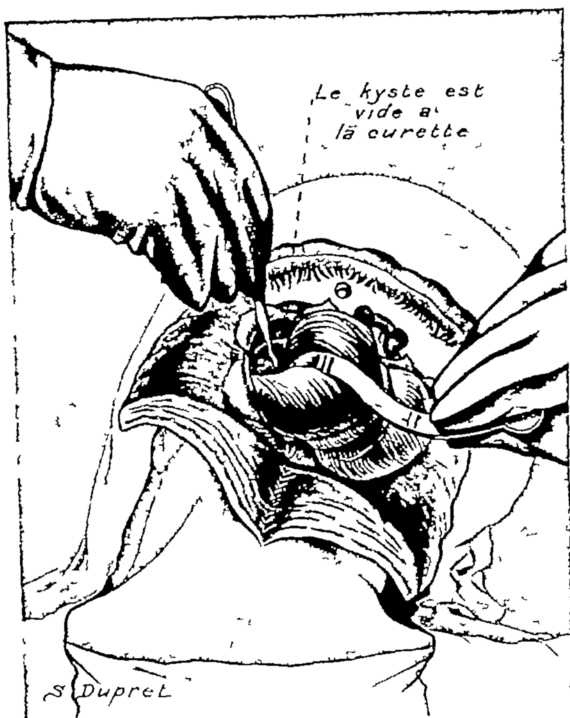


Fig 13.—Craniectomy for Cerebral Tumour. (Thierry de Martel.)

The cyst has been evacuated. The tumour is seen enucleated by a curette after its capsule has been retracted between two vessels, for it is generally surrounded by a vascular network.

Le kyste est vidé à la curette—The cyst is emptied by the curette.

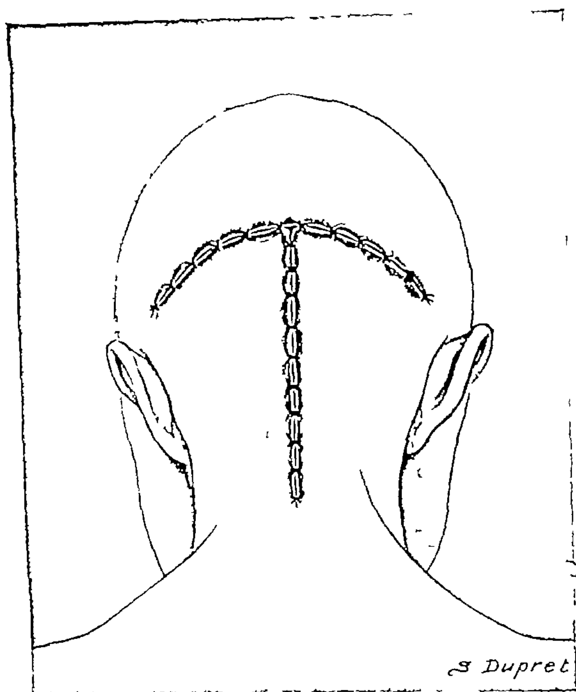


Fig 15 —Craniectomy for Cerebral Tumour. (Thierry de Martel.)
Sutures completed

II

CANCER OF THE CERVIX UTERI

BY J L FAURE

EVERY woman ought to know that cancer of the cervix is painless and develops insidiously Every woman ought to know that the slightest red or rosy vaginal discharge, between the menstrual periods, or after the climacteric necessitates a vaginal examination and the speculum Every doctor ought to know if a lesion of the cervix be suspicious, he ought not to wait, but immediately have a bioscopic examination, for the purpose of an immediate diagnosis. If the cancer grow toward the bladder, cystoscopy and catheterisation of the ureters are essential.

Two therapeutic measures are now utilised in cancer of the cervix uteri

Radium and *surgery*

What are their indications ?

Radium ought to be employed exclusively

1 For cases locally operable, if the patients be debilitated—*i e*, suffering from myocarditis, obesity, old age, glycosuria, emphysema, etc —in one word if surgical intervention might give a high mortality

2 In patients with cancer on the border line of operability, they may then become operable some months later

3 In patients perfectly inoperable, as extension to the neighbouring tissues is too wide

Surgery is on the contrary indicated in all the other cases

1 In circumscribed cancers where there is a certainty of making a complete extirpation

2 In cases where the general health allows of a good prognosis.

Unfortunately a great number of patients who consult a doctor for the first time are already inoperable or at the limit of operability This disadvantageous condition depends upon the absence of pain and also because the patients are not surprised at the red or rosy discharge between the menstrual periods or after the climacteric On the day the public learns to know that every patient

with a discharge, outside the menstrual periods, *ought to consult* a doctor immediately on the day when our confrères know in doubtful cases to have a bioscopy, and in obvious cases to tell the family immediately of the diagnosis, with emphatic advice to the patient—on that day, nearly all cases of uterine cancer will come *to the surgeon in favourable conditions*

Should radium be employed concurrently with surgery? In other words, should radium be used before and after the operation?

Before, we think yes After we think no, and that is the opinion of Rubens Duval and of Jeunet

Before operation, use radium It cleans the ulceration, diminishes the secretion gets rid of the neoplastic excrescences and improves the general health Wait for six weeks before operating (Rubens Duval)

After operation —The statistics of J L. Faure are not favourable to its application Rubens Duval believes it useless.

Should there be extensive cellulo-glandular removal from the pelvis? No There are two kinds of cases (1) the glands are extensively invaded—in this case, the prognosis is bad, whatever is done, no removal can reach the limits of the cancer, (2) if the infection be limited, then removal of some of the perceptible glands, which are often inflammatory suffices

J L Faure makes this *removal a special stage entirely* at the end of the operation

Should the hypogastric be tied? Yes, if it be easily seen it simplifies hæmostasis of the vaginal branches If there be difficulty (obesity narrow pelvis, difficulty in the anæsthesia), it is unnecessary its *advantages are not such as have the right to increase* the difficulties of the operation

Should hysterectomy be performed by the abdomino-perineal route? It appears quite reasonable to separate the vagina at the first stage After having curetted the surface of the cervix *close the vagina and then remove it from above en bloc*, with the uterus at the abdominal stage This method prolongs the operation by fifteen or twenty minutes and produces sometimes considerable loss of blood

This method would be useful in certain special cases—*e.g.*, in *those where the infiltrated* vaginal fornices run the risk of being torn when the operator draws on the uterus by the abdomen. But when a cancer has reached this extent it is better to treat it by radium

Without dissecting the vagina previously at the perineal stage, most surgeons clean the cancerous ulcerations immediately before the laparotomy

It is a good method and to be recommended in every case, except when radium has been employed previously, which has the advantage of cleaning the cancerous surface

In general, then, the combined operation is not to be recommended simply clean the cancerous excrescences and then apply iodine to the vagina After the application of radium, the wound in the cervix has a healthy appearance, painting with iodine is sufficient

J L. Faure's Method—The vagina is cleaned and tamponned Inclined plane.

1 *Very Large Cutaneous Incision*—Supra pubic retractor If the patient bulge apply a metallic hoop with retractor which keeps the intestine far from the field of operation Ligature and divide the right and left utero-ovarian pedicles and the round ligament.

Ligature of the hypogastric artery, which is found whilst separating the broad ligament Division of the vesico-uterine cul-de-sac Dissection of the bladder from the vagina

2 *Exploration of the Ureter at its Posterior Part*—This latter is adherent to the peritoneum of the posterior layer of the broad ligament.

3 *Examination for and Tying the Uterine Artery,* which crosses the ureter passing in front of it.

4 *Incision in Douglas pouch* between the two utero-sacral ligaments and the lateral vagino-pelvic bands which are the prolongation of the former

5 *Opening the Vagina in the Middle Line*—Division of the vagina under guidance of the eye 1 centimetre at least below the ulcerated area

6 *Vesico-vaginal Peritonisation*—A continuous catgut suture unites the vesical peritoneum to the anterior edge of the vagina.

8 *Exploration of the Glands Accompanying the Hypogastric Artery Removal of the Glands*—If it be easy, and if they be perceptible remove them otherwise do not look for them.

9 *Peritonisation of the Pelvis*

10 *Closure of the Abdomen*

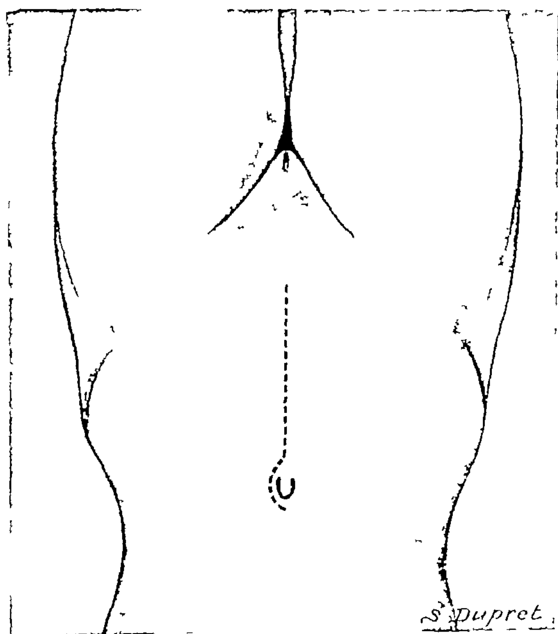


FIG 16.—CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)
Large abdominal incision

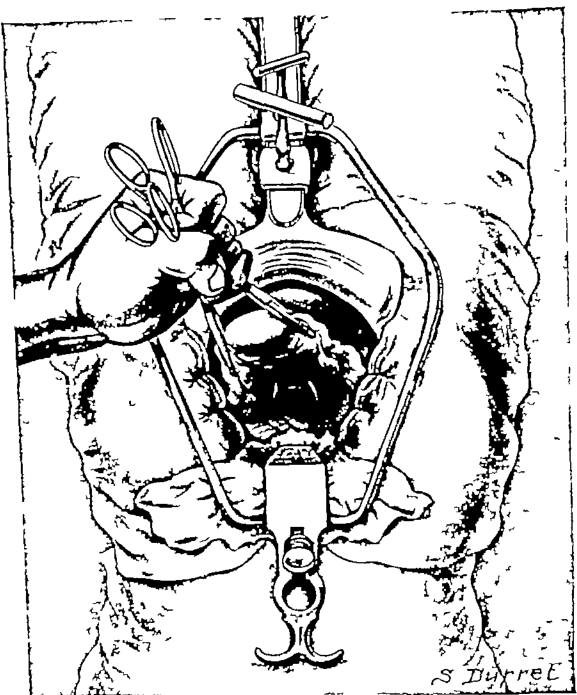


FIG 17 — CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Arrangement of the field of operation. A metallic hoop pushes back the intestines main tains the suprapubic retractor in position, and causes the wound to gape. Two compresses stitched to the edge of the abdominal opening prevent it from being inoculated. The operator places two forceps on the broad ligaments close to the uterus they act as tractors

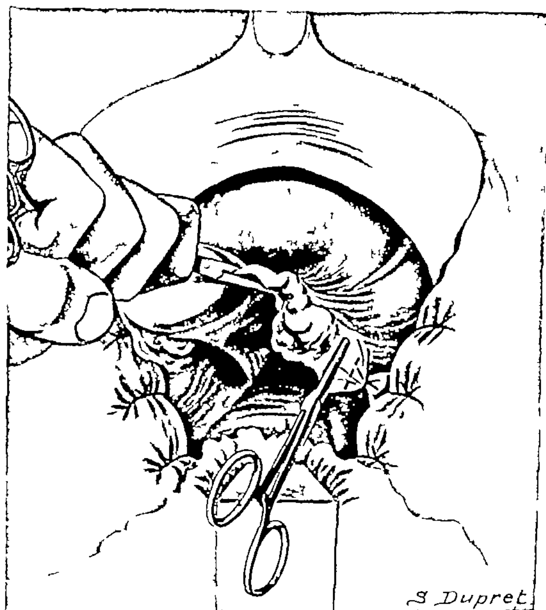


Fig 18 —Cancer of the Cervix Uteri: Abdominal Hysterectomy (J. L. Faure.)

Ligature of the utero-ovarian pedicle The division of the pedicle is made between Kocher's forceps and a ligature

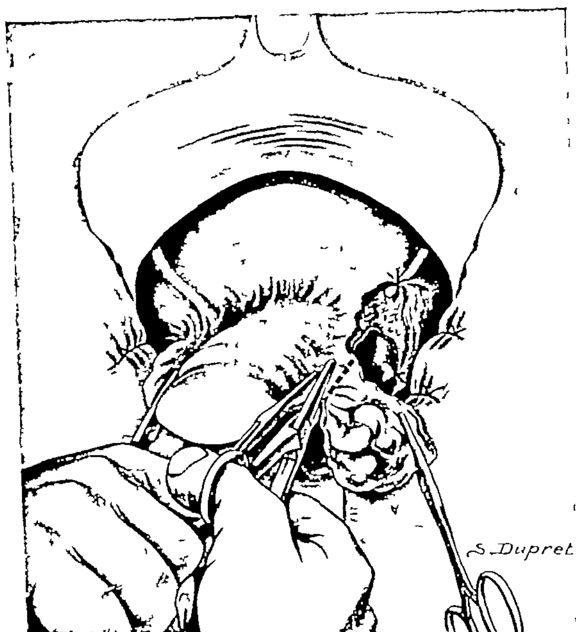


FIG 19—CANCER OF THE CERVIX UTERI: ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Excision of the right adnexa Two cuts of the scissors separate the adnexa which would inconvenience the operator The round ligaments and the utero-ovarian pedicle are tied The cellular space of the pelvis appears between the two peritoneal folds

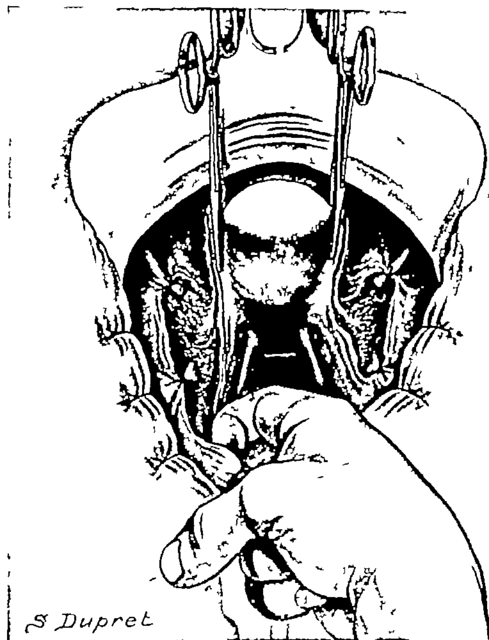


FIG 20 —CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Exploration for the hypogastric artery (The artery is not ligatured in every case) When it is possible, without difficulty it gives a bloodless field of operation. Note the position of the uterus held in the middle line by two Kocher's forceps which seize the two broad ligaments and act as tractors. The removal of the adnexa has made the field of operation freer

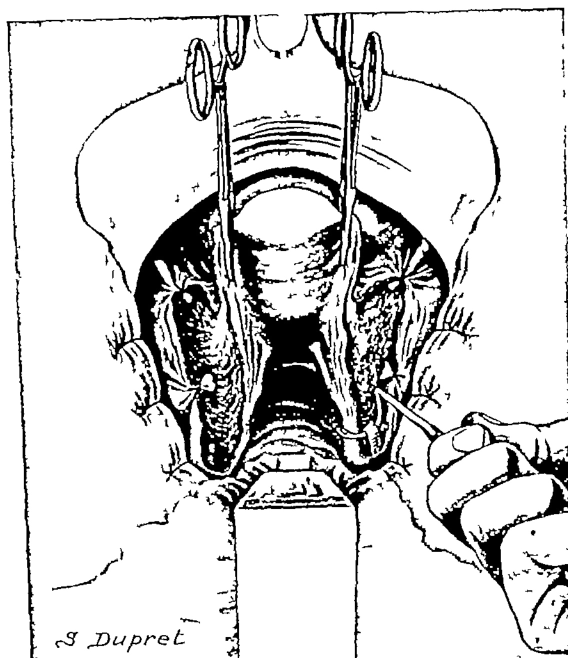


FIG 21 —CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)
Ligature of the two hypogastric arteries Examination for this latter has increased the opening of the cellulo-pelvic space.

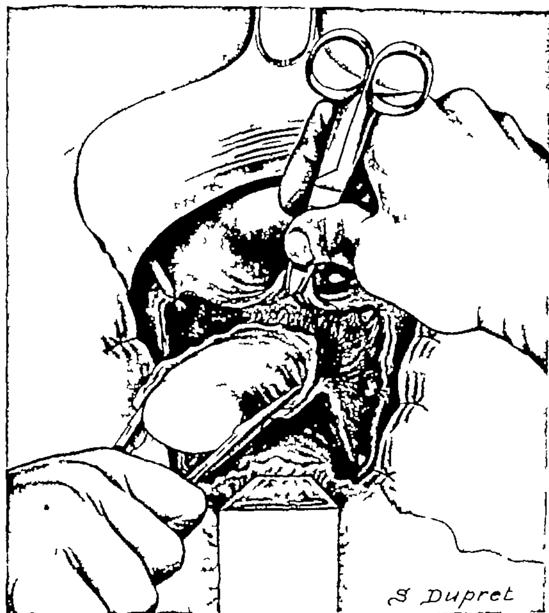


FIG 22 —CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Vesico-vaginal separation The operator has divided the vesico-uterine peritoneum. By means of the points of scissors, he pushes back the bladder and separates it from the vagina as low as possible.

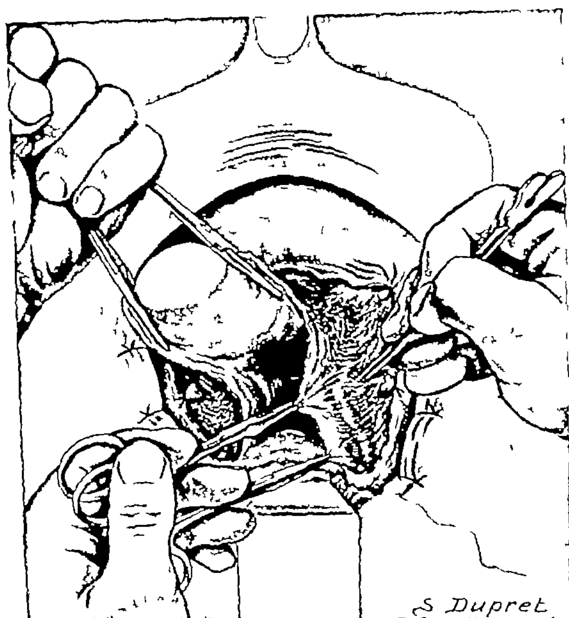


FIG 23 —CANCER OF THE CERVIX UTERI: ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Exploration of the ureter The operator marks out the postero-internal peritoneal lip this contains the ureter which adheres to it It is exposed, identified, and freed with a grooved director

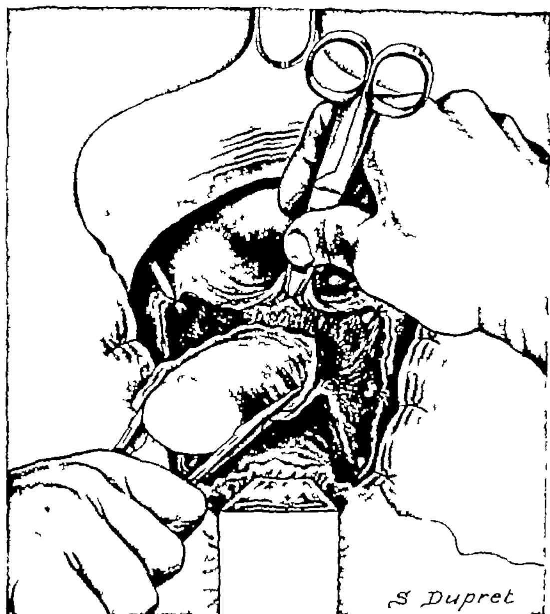


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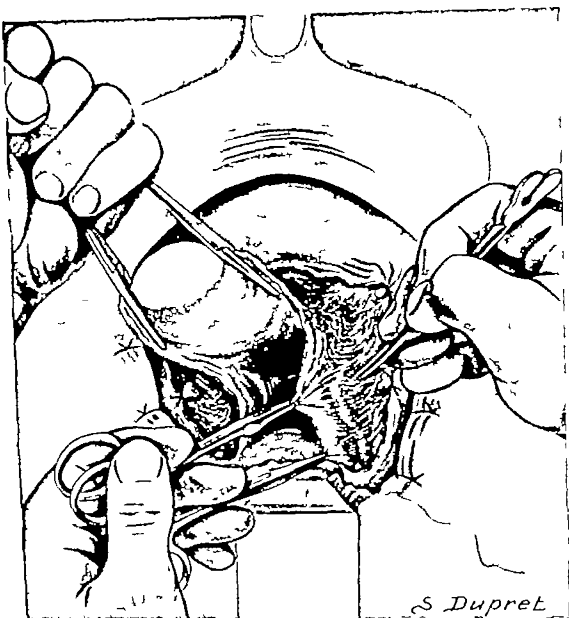


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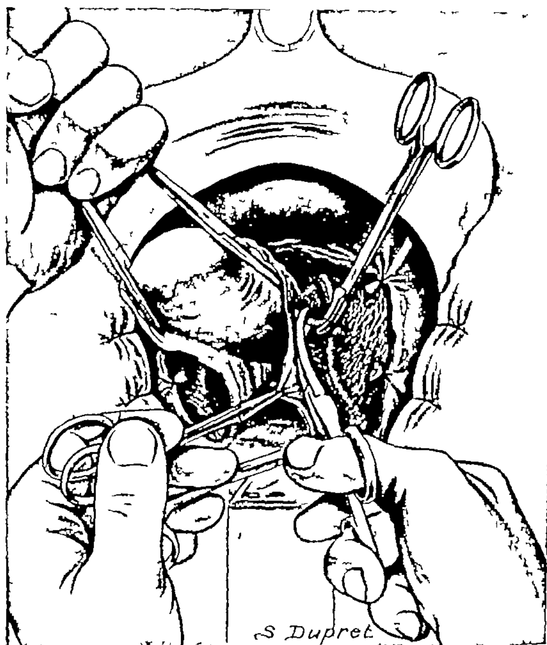


FIG 24 —CANCER OF THE CERVIX UTERI: ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Division of the uterine artery The ureter has been exposed from the inlet of the pelvis to the upper surface of the bladder at the point where the ureter crosses the uterine artery The artery is tied.

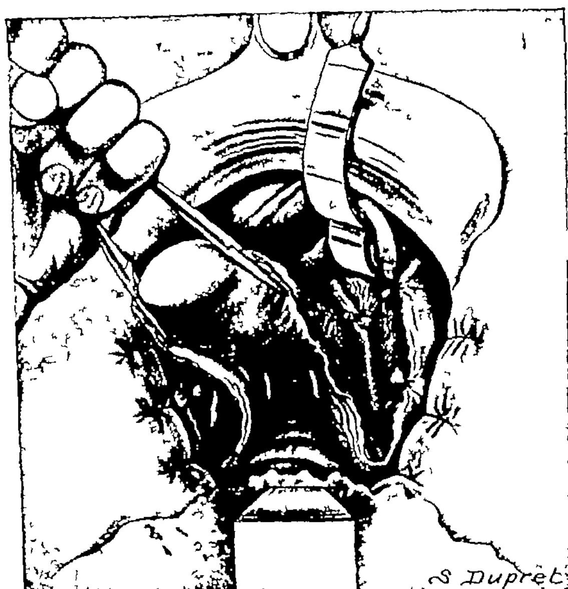


FIG 25 —CANCER OF THE CERVIX UTERI: ABDOMINAL HYSTERECTOMY (J L. FAURE
Exploration for the right vesico-uterine pedicle

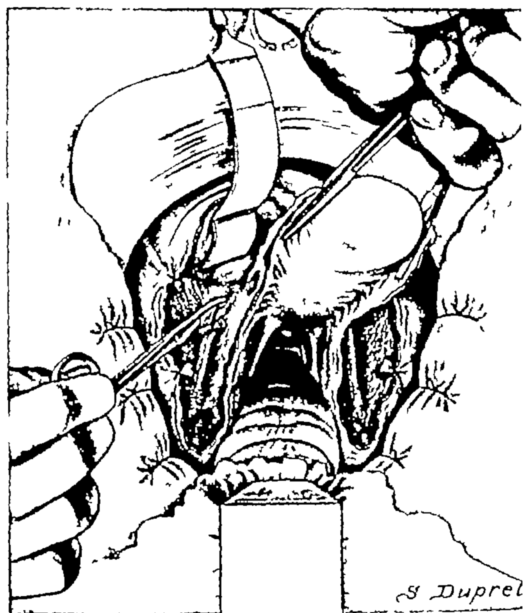


Fig 26.—Cancer of the Cervix Uteri Abdominal Hysterectomy (J L Faure)

Exploration for the left vesico-uterine pedicle It extends from the uterine artery to the bladder Faure s forceps clips it.

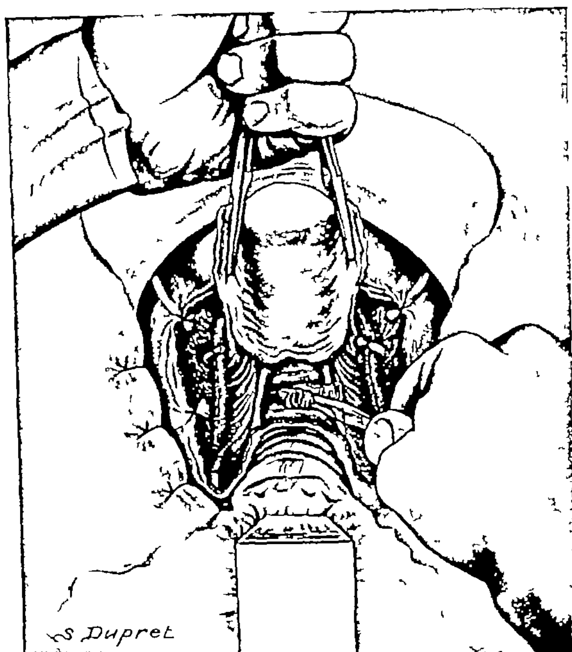


Fig 27.—Cancer of the Cervix Uteri Abdominal Hysterectomy (J L. Faure.)

Separation of the rectum from the vagina. The operator has divided the serous fold of Douglas' pouch and exposed the two utero-sacral ligaments. Between these two ligaments a compress, mounted on forceps, separates the vagina from the rectum. The separation is made as far as possible towards the perinæum; it makes the utero-sacral pedicles more prominent.

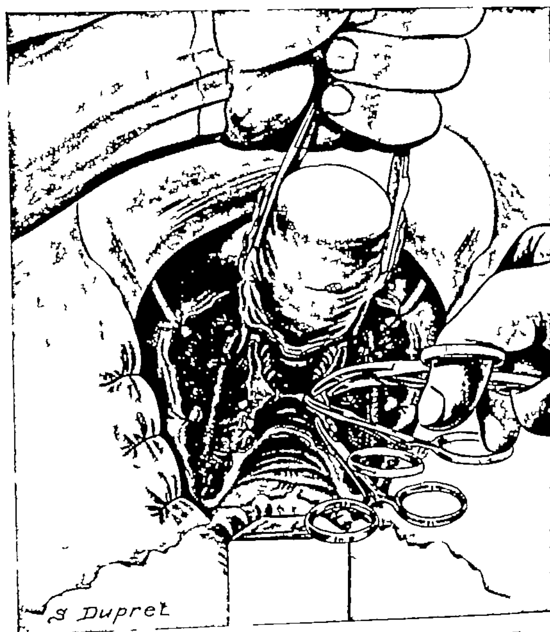


FIG 28.—CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Division of the utero-sacral pedicles This section is made in two stages the first utero-sacral; the second, vagino-sacral On each pedicle the operator first places Faure's forceps and then a ligature.

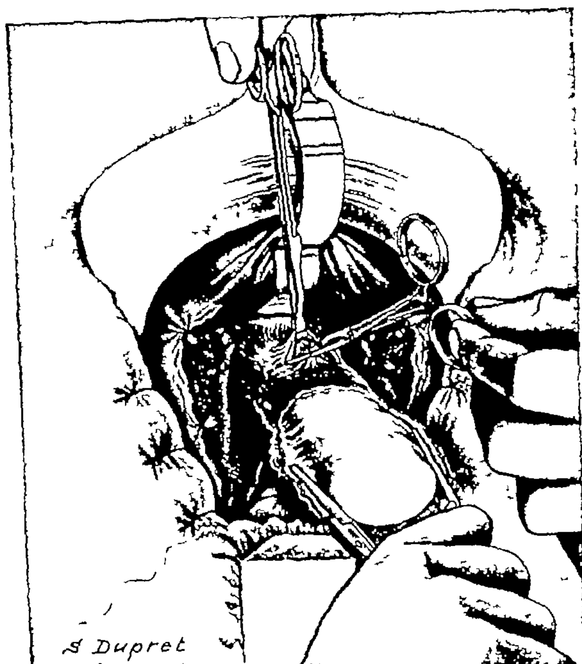


FIG 29—CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Opening the vagina. The operator has freed the vagina as low as possible posteriorly on the sides and in front. The division is made close to the bladder beginning at the anterior *cul-de-sac* Two forceps hold the lips of the vaginal wound the operator must be careful to avoid the slightest contamination of the pelvic cellular region.

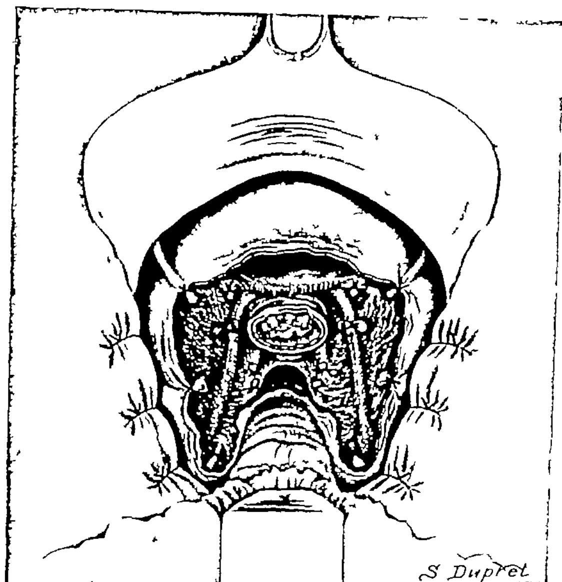


FIG 30 —CANCER OF THE CERVIX UTERI ABDOMINAL HYSTERECTOMY (J L. FAURE.)

Appearance of the pelvic cellular space after utero-vaginal division. Note the different pedicles above the vesico-uterine and that of the round ligaments; lower down, the stump of the tied uterine artery which crosses the ureter each side of the vagina still lower outside the ureter the utero-ovarian pedicles, and within this canal the utero-sacral. At the bottom of the figure ligature of the hypogastric On each side of the vagina the ureter is seen passing from the inlet to the bladder

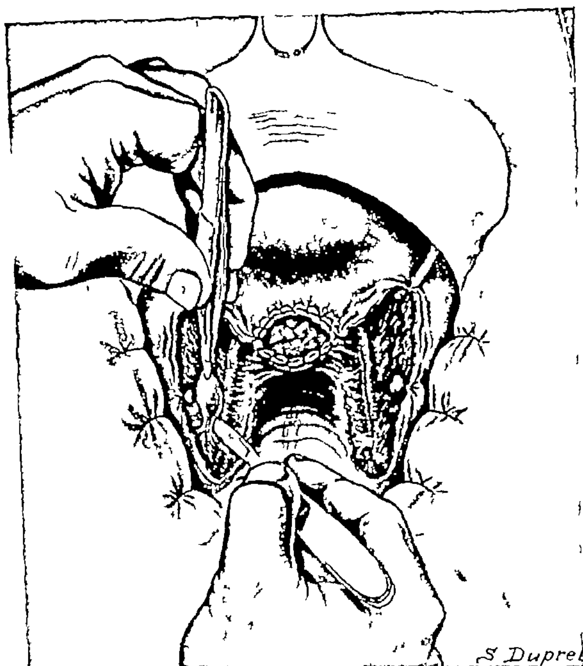


Fig 31 —Cancer of the Cervix Uteri Abdominal Hysterectomy (J L. Faure.)

The operator has hemmed the vaginal border with the neighbouring peritoneum. Exploration for the hypogastric glands only those perceptible are removed. This is a special stage.

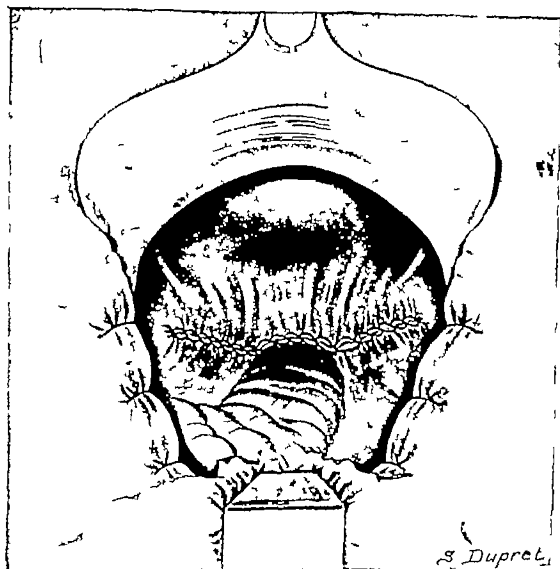


FIG. 32.—CANCER OF THE CERVIX UTERI: ABDOMINAL HYSTERECTOMY (J. L. FAURE.)
Peritonisation of the pelvis.

CURIETHERAPY FOR CANCER OF THE UTERUS

By H. RUBENS DUVAL

THE efficacy of radiumtherapy is confirmed by the cures of inoperable cancers, the authenticity of which is established by scientific researches and by the test of time From this it is deduced, that the method which is capable of curing bad and inoperable cases of cancer of the uterus ought, *a fortiori*, to be applicable in the treatment of less advanced and operable cancers.

To this, some surgeons raise the objection that radiumtherapy favours metastases that there are more cases of metastases in patients treated by radium than after operation, and they infer from that that the chief place should be given to surgery, radiumtherapy remaining the treatment of choice in inoperable cancers There has not as yet been any reply to this quite recent objection In the absence of sufficiently numerous observations, we do not know in what way curietherapy favours the formation of metastases it seems to be true that they occur more often and more rapidly after irradiation of the tumours, than after removal by operation

Why? Let us note at first, that the cancerous cells disseminated into a distant organ from the original tumour only become the germ of a metastasis, if they become engrafted. But from what we have been able to discover, the defensive phenomena of the body against cancer, we believe such a graft is often killed or immobilised during its development

Surgical removal of a tumour gets rid of it and except for the seriousness inherent in the operation, or in the use of anæsthetics, does not in the slightest degree diminish the reactional powers of the organism. If the cancerous cells were, at the time of the operation already swarming far and wide and not yet firmly rooted, they would be, according to the greater or less efficiency of the powers of defence, either destroyed or immobilised in a state of depressed vitality which could last for months or years

The rays of radium kill the cancerous cells if efficiently irradiated,

but do not remove them. The products of their disintegration are in part eliminated *externally with the uterine discharge*, and in part absorbed by the organism. But it is probable, (M Bader and I propose later to give reasons for this) the massive absorption of these products of cellular disintegration neutralises in some way the defensive reactions of the body, which can no more exercise any *action against* the cancerous cells, previously disseminated beyond the region thoroughly irradiated, nay, more, it is possible these products of *disintegration serve for the* development and growth of the metastases (Regaud)

According to our researches at present in progress we believe the rapid elimination of these waste products can be obtained by *appropriate general treatment, the defensive reactions of the body* can be strengthened, and the risk of the rapid development of metastases after radium treatment can be annulled. Whilst anticipating this to be so, we ought to take account of this risk in appraising the respective indications of surgery and treatment by radium.

Metastases in uterine cancer at the beginning of the disease are rare, and the cures by radium of many years standing obtained for *inoperable cancer are witness that even in very advanced cases,* metastases may be absent. It can, then be presumed cancers at their very commencement have not disseminated far and wide neoplastic cells, and there is no more risk of metastases after treatment by radium than after operation As its curative value is, on the other hand, at least equal to that of surgery, as it requires neither operation nor even anæsthesia, it should be the treatment of choice.

When *the cancer is still operable, but yet* sufficiently advanced in its evolution that it is to be feared that metastasis has had time to be produced, the method to be adopted is embarrassing Whilst waiting for more numerous *observations to establish to what degree* the fear of metastases is justifiable it appears to us the advantages and the disadvantages respectively of surgery and radiumtherapy are equal, so that it is permissible to recommend the *one or the other form* of treatment It has been proposed in order to increase the chances of success to combine them

Should radium be employed after hysterectomy? *I do not think so It seems that the* cancerous cells which have remained after removal of the tumour, temporarily enter into a stage of diminished vitality during which their sensibility to the rays of radium *decreases to the point that radiumtherapy* after operation runs the chance of being useless (Regaud)

Should radium be applied before operation? How long after should operation be performed? By reason of its good effects, treatment by radium before operation is to be recommended, by reason of the subsequent development of sclerotic tissues, which can make a hysterectomy difficult, surgeons have a tendency to operate shortly after irradiation, before sclerosis can be produced Theoretically, from the time irradiation is finished the cancerous cells are fatally injured, and removal of the neoplasm can then be performed But, practically, it is better to wait, before operating, for the uterine discharges to cease, for the neoplastic ulcerations to become cicatrised, and for the patients to return to a good general state of health Such a state is obtained in six weeks. Then intervene with an operation suitable for a patient in a satisfactory condition. But in six weeks, marked sclerosis can occur

From our clinical and operative observations, we find that the difficult cases—those in which the surgeon can with difficulty dissect out the uterus, free the ureter and the bladder from a covering membrane of fibrous tissue—are inoperable, and the surgeon undertook the operation because they were much improved by radium treatment. Moreover, except after faulty technique, a single application of radium only produces sclerosis in the areas which were previously infiltrated with cancer If treatment by radium cause difficulty in operating on cancers only barely or not operable, it in no way complicates hysterectomy for certainly operable cancers, —i e with no invasion of the peri uterine tissues. On the contrary, early hysterectomy carried out fifteen or twenty days following irradiation, presents none of the advantages of late hysterectomy, the ulcers have not yet cicatrised, the tissues are completely reacting the discharge is abundant, and the general state has not yet improved. It can even be temporarily enfeebled by absorption of the cancerous cells it is this which, without dogmatising makes me fear it, since I have had two deaths occurring rapidly after operation subsequent to recent irradiation

In cases of inoperable cancer of the uterus and in recurrence after hysterectomy, radiumtherapy is incontestably the treatment of choice, unless the lesions are far advanced, it is then contraindicated It is also inadvisable in cases of infection of the adnexa or of the pelvic peritoneum (Regaud)

According to the case curietherapy will have a curative or palliative purpose (Regaud) in all cases the method of ultra penetrating rays (Dominci) should be employed

In radiumtherapy the details are of great importance, the technique of treatment of uterine cancer has also been the object of many researches and publications, notably by M Regaud and his assistants which should be consulted *

For gynæcologists who simply desire to know *what ought to be expected* of radiumtherapy, I will limit myself to the following indications

During irradiation, rest in bed is obligatory the patients ought not to get up or sit up, for the armamentarium employed runs the chance of being displaced Rest in bed is limited to the duration of the application of radium which varies from two to five days. In the course of irradiation there is often nausea, sometimes accompanied with vomiting but this is not serious.

After irradiation the patients experience lassitude and a sensation of weakness more marked the greater the absorption of the toxic products, they have a purulent discharge, the more abundant as the elimination of the cellular débris is more marked but generally *no loss of blood. By degrees the loss ceases and the patients recover* weight and strength

When cure is possible eventually, attempt should be made to obtain it by a single irradiation, the apparatus being distributed in the uterine cavity (this may require dilating) and into the vagina, in such a way as to irradiate equally the growth and the suspected tissues Irradiation ought to be about 30 millicuries of destroyed emanation. This dose brings about suppression of the menstrual function. It may produce a slight vesical and rectal reaction which requires no special treatment

If it be not possible to catheterise the uterine canal, the application must be limited to the vagina, combined with radium puncture of the neoplastic tissues every time it is possible. Finally, either a second application of radium is made into the uterine canal, if it has become open, or better hysterectomy performed, if it be possible This is all the more indicated as the absence of intra uterine irradiation ought to make one fear incomplete irradiation

In cases of apparent cure it is necessary to keep the patients treated under observation and be prepared to make a new application of radium on the least suspicion of a recurrence Often a second application successfully completes the result of the first.

* ' Sur la Technique de la Curiothérapie dans le Cancer du col de l *Utérus*," by MM C Regaud, J Roux Berger A Lacassagne, H Cesbron H Coutard, and G Richard (*Bulletin de l'Association Française pour l'étude du Cancer* July 19, 1920)

Recurrence after operation can barely be treated except by placing the radium appliances on the floor of the vagina, against the recurrent growth Sometimes radium puncture can also be utilised

In cases where a cure cannot be hoped for, but where good palliative results can be obtained, such as cessation of the discharge and of the hæmorrhage, cicatrisation of the ulcerations preventing and hindering as far as possible the formation of vesical or recto-vaginal fistulæ, the applications of radium should be made in moderate doses, weak rather than strong, and repeated if they appear useful, without being able, in these atypical cases, to map out in advance a line of precise treatment

III

TREATMENT OF FIBROID TUMOUR OF THE UTERUS

BY PETIT DUTAILLIS

Should every Fibroid Tumour of the Uterus be Treated?—Every fibroma, when recognised, should be treated, it is, moreover, a menace to the general health The proof of this is furnished by a great number of women with uterine fibroma showing signs of azotæmia, this renal insufficiency can be very marked and accompanied by cardio-vascular insufficiency and by œdema of the lower limbs It need not cause signs of compression the most marked cases of cardio-vascular insufficiency, we have noticed, have not borne any relationship to the size of the fibroma or to its anatomical formation Pressure of the tumour could not have been the cause. It is more likely the fibroma secretes toxic products which injure the body and alter the glandular elements. Consequently, every fibroma threatens the general health and ought to be treated.

Four Forms of Treatment Exist—Thermal cure, organotherapy, physical and surgical treatment The surgical treatment may be (*a*) conservative (myomectomy), or (*b*) radical (hysterectomy)

Myomectomy as well as hysterectomy can be performed by the abdominal or by the vaginal route.

Many of these forms of treatment may, besides be combined A woman suffering from a fibroma may be treated by radium or surgically for pressure symptoms and for hæmorrhage, both dis appear but she is still a sufferer from fibroma medically, even if the fibroma be removed. A fibroma does not form by chance "every disease is a morbid phenomenon and not an accident ', ' it is not a local chronic disease, but localised diseases (Leredde) For the formation of a fibroma some general special conditions are required and these we know badly, a woman who has had a fibroma, still shows alterations more or less obvious and of old standing, which require general and physical treatment, organotherapy and a well-conducted hygiene so that, although the surgical and radium treatment be finished, the physician should continue to keep the patient under observation.

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1 HYDROLOGY —The cures at Bagnoles, Salies, Biarritz, Saint Sauveur, etc, are very useful, because they stimulate the general condition, activate the circulation, and remove the congestion of the pelvis In addition to the radio-active action of the waters, physical treatment, as general massage and gynæcological gymnastics, is employed Personally, we have often sent patients to these different thermal stations, before operation, for the purpose of preparing them for it and the women are often in a better condition for the surgeon's knife

2 ORGANOTHERAPY —Fibromata are accompanied by pluriglandular insufficiency (renal, thyroid, etc.) Operation or radiumtherapy *does not afterwards leave the woman in a normal* condition, the insufficiency persists, and if the patient has been submitted to a hysterectomy, the pluriglandular insufficiency is complicated by ovarian insufficiency

3 PHYSICAL MEANS RADIOTHERAPY AND CURIETHERAPY — These two methods have certainly considerably modified the treatment of fibromata and constitute a very great advance. Physical treatment reduces the part played by surgical treatment, it has limited its use, but also, in certain cases makes it more efficacious. Some surgeons have objected, that radium and the X rays produce *changes in the general health by alteration of the suprarenal glands,* which are so sensitive to the X rays, and can even transform fibromata into cancers. On our part we have noted a very marked case which after some séances with the X rays, had become malignant, and death supervened with fearful rapidity But what method of treatment does not fail sometimes? From now onwards, it can be said curietherapy and radiotherapy have frequent indications but it is necessary (*a*) to know the indications, (*b*) to follow a strict technique.

Two years since we saw a stout woman with a fibroma, the size of a three months' pregnancy She was anæmic from menorrhagia, twenty days each month and suffered from œdema of the lower limbs swelling of the face and dyspnœa on exertion Her complexion was waxy Examination of the blood revealed azotæmia (1 gr 50) Examination of the urine showed the presence of marked acidosis. There could be no question of surgical treatment. A single application of radium by F Jeunet, produced normal menstruation a second application two months after the first, *caused complete disappearance of the periods, during treatment,*

massage was employed every day for one hour As soon as her strength permitted it, she used the spiroscope (Pescher), and now not only has all hæmorrhage disappeared, but the azotæmia has been reduced to 0·50, the acidosis has gone and the woman leads a nearly normal life This observation proves at the same time, the influence of the fibroma on the development of cardio-renal symptoms, the production of œdema without compression, and the excellent result which curiotherapy gives in cases where the surgeon cannot even intervene

Before the operation, massage should be employed every day for about an hour, the spiroscope should be used to the extent of ninety exercises a day with Pescher's bottle. Patients not so well off can use a bottle of Javel instead of Pescher's bottle. The diet should be only vegetarian (in stout women only fruit) By this means, the amount of urea in the blood decreases. Women operated upon in these conditions are cured with infinitely greater ease

After the operation the same treatment should be continued for many weeks or months. Opotherapy, including not only ovarian, but often thyroidal, should be combined with it The treatment should be ordered and supervised by an experienced medical man.

What are the *indications for X rays and for radium?*

On this point we have asked our colleague, Petit-Dutaillis, a skilful gynæcologist to be kind enough to give us the result of his experience. We have asked him to draw up the following account, which we submit to our readers

Fibroma being an innocent tumour, the gynæcologist ought, if the normal symptoms be not exaggerated, or if there be no complications, to be content to keep the patient under observation

In the contrary case, he should now choose between the two methods radiotherapy and surgery—radical (hysterectomy) or conservative (myomectomy)

On principle physical remedies ought to be tried at first in the ordinary cases, with no local complications, and above all if examination of the heart, or of the blood pressure, of the blood and of the excretions be unfavourable.

However except when these conditions are not too bad, the preference even in these cases without local complications, ought to be given to myectomy, for a fibroma, or a few enucleable fibromata leaving behind a uterus which can be impregnated.

Ablation of submucous pediculated fibromata, it goes without saying, is not any matter for discussion

Röntgentherapy seems to have lost much ground to the advantage of curietherapy The objections made against it are the length of the treatment (on the average fourteen séances weekly), the harm inherent in the absorption of the products of histolysis, the increased action of the glands distant from the tumour (supra renals, pancreas), and finally the danger of provoking or activating cancerous degeneration, and that it acts by aberrant karyokinesis, or by stimulating a growing neoplasm by trophic irritation of its special tissue, or by abiotic action on the neighbouring tissues. Certain facts rare as they may be seem peculiarly to support this last objection

Curietherapy is not open to the same objections provided that it aims at, above all, rapid sterilisation of the ovaries in one or two séances. That is to say, it ought to be directed especially against fibromata when castration is considered justifiable fibromatous uterus, of firm, normal consistence, with or without subserous, but not with submucous lobes and provided that they are not so large that the ovaries cannot be reached by intra uterine radium applications Becquerel's rays do not pass, it is said, beyond 4 centimetres. We may remark the exhaustion of the rays varies with the density of the tissues, that the limits of their field of operation remain to be fixed in fibromata, and we must reckon with the hypersensibility of the growing epithelium Measurement of the uterus can only give an incomplete criterion, fibromata with very thick walls may have a mucous tract much shorter than fibromata with thin walls. In practice, radium ought to be tried even with fibroma of large size reaching to the umbilicus, with a mean dose of 18 millicuries destroyed in forty-eight hours, and with strong filtration, only allowing the more penetrating rays to pass if only the rubber tube containing the metallic filter can be passed to the base of the organ which is always possible after dilatation, the submucous projections which would be an obstacle seem to us to be, from their evolution even and until fuller investigation a contraindication to the employment of radium.

Apart from the above objections, treatment by the X rays is particularly applicable—

(a) In young women, in whom pregnancy can be anticipated although the combination of fibroma and of pregnancy is scarcely desirable.

(*b*) For uterine fibromata with diffuse submucous lobes

(*c*) For œdematous fibromata (Alexandroff)

(*d*) For giant fibromata

All fibromata presenting complications in their own growth, or in relation to the surrounding parts, ought to be removed at once

(*a*) Fibromata in process of malignant change or simply suspected of malignant degeneration (rapid growth of the tumour with increase or return of the menses)

(*b*) Ulcerating fibromata, or tending to ulceration (of the colour of wine dregs and painful on pressure), fibromata with pyometritis

(*c*) Calcified fibromata, often recognisable with the X rays (Tuffier)

(*d*) Fibromata complicated with inflammation of the adnexa, peri uterine tumours or with prolapse

(*e*) Fibromata with retention of a dead fœtus, with retained placenta inaccessible to artificial removal, and even with a living fœtus, if the obstacle from the fibromatous lobes opposing delivery does not seem removable.

(*f*) Subperitoneal fibromata, an inconvenience owing to their size or mobility

The symptoms of compression are rarely sufficiently intense and urgent to demand hysterectomy They often disappear with great rapidity under the action of rad otherapy

Hysterectomy for fibromata still shows a mortality of about 5 per cent., but this prognosis can be improved if previously, care be taken to make enquiries of the general complications and to treat them as well as is possible, if, before operation, in every case the patients are treated for azotæmia and by massage, if spinal anæsthesia be used instead of genera anæsthesia, the former of which avoids pulmonary, hepatic, and renal complications and keeps the abdomen quiet during the operation.

Although it is reasonable to allow to-day to physical remedies a considerable and primary place in the treatment of fibromata, it is not yet possible to limit definitely their indications The discussion is still open and has only a chance of being fruitful if in place of championing one or other method at all costs, everyone convinces himself of this general truth that the choice ought to be made (*a*) of the method causing least danger, and (*b*) giving the greatest benefit in fixed cases, and with perfectly precise technique

TECHNIQUE OF CURIETHERAPY FOR FIBROMA

BY FRANÇOIS JEUNET

F JEUNET indicates to us below, succinctly, the technique of curietherapy

INDICATIONS —I Those cases which are surgically impossible (inoperable cases)

II. Women nearing the menopause, large or moderately large fibromata hæmorrhagic

III Fibromata with perimetritis (which is absorbed by irradiation)

IV *Trial treatment before operation.*

TECHNIQUE —Disinfection by tampons the night before (drain of collargol)

Extemporaneous dilatation (size of urethral sound No 16)

Application of a tube of radium or of emanation (silver tube enclosed in a rubber sound)

Dose 50 millicuries for twenty to thirty hours.

RESULTS —Decrease of congestion hæmostasis, atrophy, diminution *in size of the tumour remarkable improvement in the general* health.

AFTER TREATMENT —Keep the patient under observation. Provide as necessary, and sufficiently often for two to three séances, at intervals of less than three months

4 CONSERVATIVE SURGICAL TREATMENT MYOMECTOMY—(*a*) *Vaginal Myomectomy* —When a fibroma occupies the lower segment and causes it to protrude into a cul-de-sac of the vagina covered by the vaginal mucosa, the operator may try to extirpate it by this route, we have done this operation ten times twice the women were pregnant the first had an abortion myomectomy was *performed on the second a month before term*, suppuration had lasted up to the accouchement, this woman was delivered of a living child, but suffered from phlebitis and was ultimately cured At the present time we think *it preferable to let the child grow* until the end of pregnancy, and then to perform abdominal hyster

ectomy, an operation easily performed, as we will show further on ("Hysterectomy for Fibroma and Pregnancy," p 69)

(b) *Abdominal Myomectomy* —This operation has for its purpose the preservation of the uterus, to allow of future pregnancies, or to preserve the menstrual functions

The majority of women suffering from fibroma are sterile, but not all, a woman on whom myomectomy has been performed can become pregnant. We have had the opportunity of performing myomectomy sixteen times, we have observed two subsequent pregnancies one had three children, and one, one These sixteen operations have resulted in quite a simple cure fourteen times, but in the two others (who were cured) one had phlebitis and the other an hæmatoma after the operation, in Douglas' pouch, which suppurated, and had to be incised secondarily

The operation is very simple

The abdomen is opened, the uterine capsule is incised at the prominent part, and the fibroma enucleated, the cavity is afterwards closed by two continuous catgut sutures Hæmostasis must be perfect, otherwise there is a fear of intra uterine hæmatomata, opening into the uterine cavity, which can give rise to infection. The operator ought to be very careful when separating the deep part of the myoma, not to open the uterine cavity If it should be opened, it should be closed separately by some interrupted catgut sutures so as to isolate it completely from the cavity of the myoma which ought to be in these particular cases, closed with special care

Treatment of Uterine Polypi —When a fibroma has a tendency to spontaneous enucleation, when it forms a polypus visible at the opening of the cervix, or in the vagina, it should be removed. This necessity is all the more obligatory as this fibroma gives origin generally to hæmorrhage a serous or sero-purulent or even putrid discharge when the polypus is undergoing ulceration. Should these cases be treated by hysterectomy or extirpation of the fibroma? The polypus should be removed and nothing else done It may be taken away piecemeal or by torsion the operation is often very easy sometimes very difficult when the fibroma is sessile, or with a broad pedicle, and when it leaves behind it, in the uterine cavity a large raw surface In these cases it is a good thing to give intra uterine antiseptic injections. If the surface left by the fibroma be smooth if the operator leave no shreds behind nothing is required the contraction of the uterus once the fibroma is removed

will reduce the wound to small dimensions, this wound will rapidly cicatrise.

But if removal of the fibroma has been difficult, and the operator is under the impression of having left behind some large fragments, and that these are capable of producing infection, he should not wait for septic symptoms before making a decision he should in twenty four or forty-eight hours perform hysterectomy This is quite exceptional. We have had only one case in our practice. All the others, which we have treated by simple extirpation of the polypus, ended in cure

Twenty years since, at the time we performed off hand vaginal hysterectomy, we systematically performed vaginal hysterectomy after the removal of large uterine polypi. We have not lost any patients, but we have had repeatedly the impression of having performed a serious and quite unnecessary operation. We consider, then, it is preferable to keep always to pure and simple extirpation of the fibrous polypus whatever its nature and size, and not to perform secondary hysterectomy unless it is compulsory, owing to the infectious nature of the wound

If the surgeon note the presence at the same time of a large fibroma on the abdominal side, he should resist the idea of removing it for the present, he will do better, if the tumour be operable, to postpone the hysterectomy for some months later, and in this way perform the operation in two stages

Treatment of Subperitoneal Fibromata —It sometimes happens the operator on opening the abdomen, finds a large fibroma and a nearly normal uterus. *In these cases, he ought to remove the fibroma and leave the uterus and the ovaries* it is not a matter of indifference for a woman to continue to have her periods even if pregnancy be out of the question.

5 Indications of Vaginal Hysterectomy —During the first years of our surgical practice we performed vaginal hysterectomy in the great majority of our cases, following the example of our skilled master Gustave Richelot like all our colleagues, we carry out this practice less, but we think modern vaginal hysterectomy—*i e.* followed by closure of the vagina and by hæmostasis by ligatures—can be of great service no doubt its indications are rare, but when they exist it is wise to have recourse to it and we do so every time we consider the inclined plane would be dangerous. In women suffering from cardiac insufficiency the obese, or the

plethoric, with not very large fibromata (the size of a three or four months' pregnancy), we think vaginal hysterectomy has its indications, and can be of great utility If these women be virgins, with a sclerotic vagina, the indication certainly does not present itself But in a similar case we have removed a fibroma after dissection of the vulva, in a plethoric woman, previously recovered from hemiplegia We have then removed a fibroma in her as big as two fists after dissection of the vulva, cure took place without incident (sacral anæsthesia)

6 Abdominal Hysterectomy —*Should Abdominal Hysterectomy be Complete or Incomplete?*—This is a question of the case in hand, on principle, the easier operation should be carried out partial is easier, and hence milder The operator should refrain from the simple procedure, only if a more difficult one is based on serious reasons with better future success Consequently, when in the course of an hysterectomy complete appears easy, and as easy as partial, he should perform it, but if the pelvis be narrow, the patient stout and a bad subject for anæsthesia, the partial operation, which is easier, should be undertaken without hesitation. Besides, if the cervix be normal and small, there is no indication to perform complete hysterectomy In all cases, on the contrary, where the cervix is large or ulcerated, and when cut away offers an extensive raw surface for suturing, it is much better to remove the stump and carry out a complete operation.

To sum up we consider partial hysterectomy the operation of choice, because the cases of degeneration of the cervical stump are rare (we have seen it twice in our practice), secondly, because it is quicker and easier and lastly because it lends itself better to ligamental suspension of the vagina

But when the cervix is ulcerated, when it is large, and after division it offers too extensive a surface for suturing, complete hysterectomy should be performed. Of ten cases of abdominal hysterectomies for fibroma, we perform three complete and seven partial operations.

What abdominal method should be employed? That of Richelot, Doyen Kelly, or of Terrier? Terrier's method is simpler, it consists in cutting from above downwards the broad ligaments one after the other passing down gradually to the cervix, cutting the uterine arteries and then the cervix, it is indicated in the majority of cases.

Kelly s method consists in cutting the more accessible broad

ligament from above downwards, up to the cervix, cutting the cervix, and then dividing the other ligament from below upwards, this procedure is indicated in the cases where the fibroma is well seen on one side, but badly on the other, as a result of its irregular development

Doyen's procedure consists in opening, first, the vagina, seizing the cervix, separating it, and dividing the two ligaments from below upwards.

To this original procedure, the majority of surgeons prefer J L Faure's, which includes primary dissection This skilled surgeon begins by dividing the cervix and cutting the two broad ligaments from below upwards. This primary separation can be performed by the anterior or by the posterior cul-de-sac according as the fibroma is developed at the expense of the one or of the other opposed surface In other words the cervix is attacked on the side it is easily accessible This dissection is rendered easier by the method of *Thierry de Martel. This consists in making, with the finger,* an opening in the broad ligament in the avascular space—*i e*, between the ureteric branch of the ovarian and the uterine artery By this opening the operator introduces Faure's forceps and seizes the right and left uterine artery, the artery is cut then only the cervix, freed at the sides, is divided the uterus can be drawn up with greater ease, it is sufficient to apply two forceps to the two broad ligaments, it is an excellent method, which we use as often as possible

Pre- and Post-Operative Treatment of Hysterectomy—Every *woman suffering from an uterine fibroma is suspect* as regards her heart and kidneys Renal insufficiency is frequent, azotæmia and acidosis ought always to be looked for, some of these women are stout plethoric or with œdema of the lower limbs, and complain of dyspnœa on walking It is a good thing to prepare for the operation by a special diet and by massage which helps the circulation and by the spiroscope, which puts the blood in order

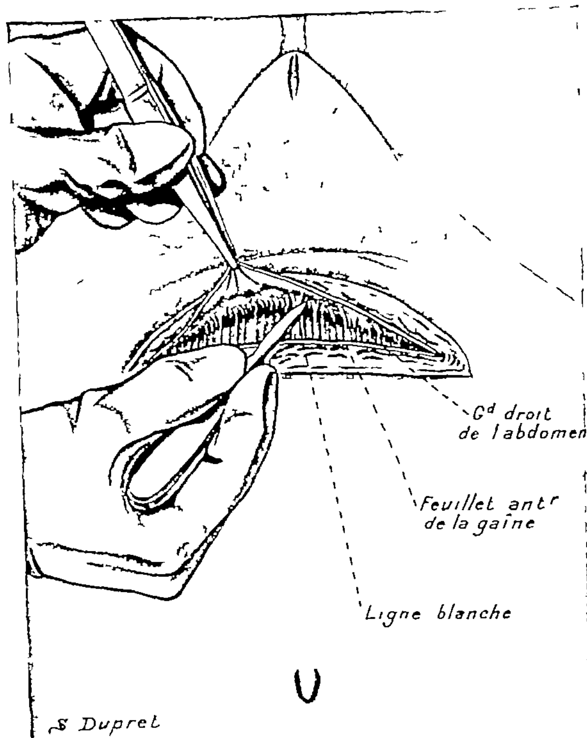


FIG 33.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

The transverse incision has been made here, in a suprapubic fold, so as to be as little visible as possible. The aponeurosis has been divided close to the cutaneous incision. Never dissect the aponeurosis from the skin. The median adhesion of the aponeurosis will be cut with the knife the adhesion of the recti with the sheath will be separated by the compress.

Gd droit de l'abdomen=Rectus abdominis. *Feuillet antr de la gaîne*=Anterior layer of the sheath. *Ligne blanche*=Linea alba.

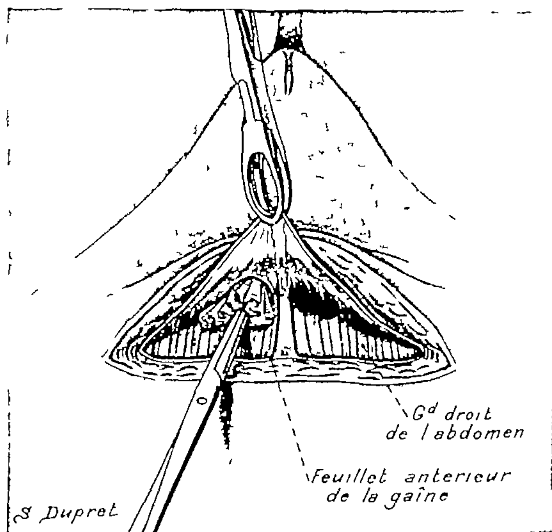


FIG 34 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA

How the anterior surface of the rectus is separated from the anterior layer of the sheath. The operator begins by separating the lower part of the anterior surface of the rectus *up to the pubis, making use of a tampon on forceps. The middle of the aponeurotic* edge is held by tissue forceps.

Gd droit de l'abdomen—Rectus abdominis. *Feuillet antérieur de la gaîne*—Anterior layer of the sheath.

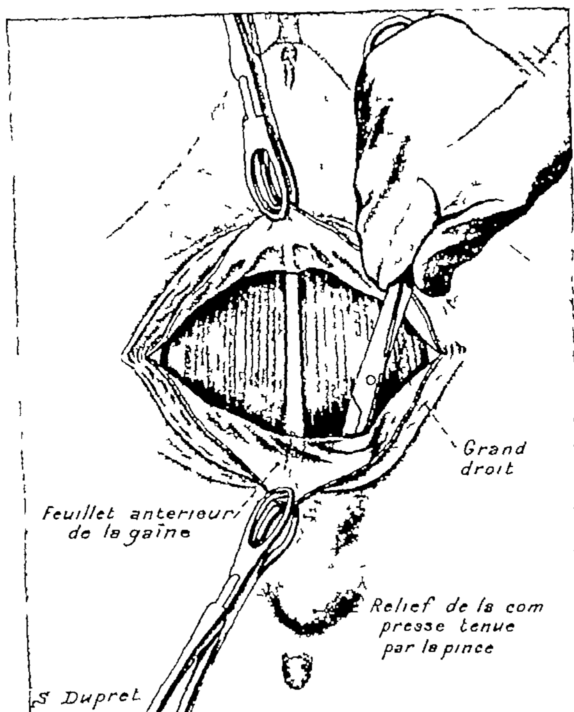


FIG 25—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA

How the rectus is separated from the anterior layer of the sheath Never make use of a cutting instrument because of the vessels, which may produce an hæmatoma at the end of the operation. Note in the middle line the aponeurosis is separated, and the mark of its insertion into the peritoneum. This part has been freed not by the com press, but with scissors.

Feuillet antérieur de la gaine=Anterior layer of the sheath. *Grand droit*=Rectus. *Relief de la compresse tenue par la pince*=Outline of the compress held by forceps.

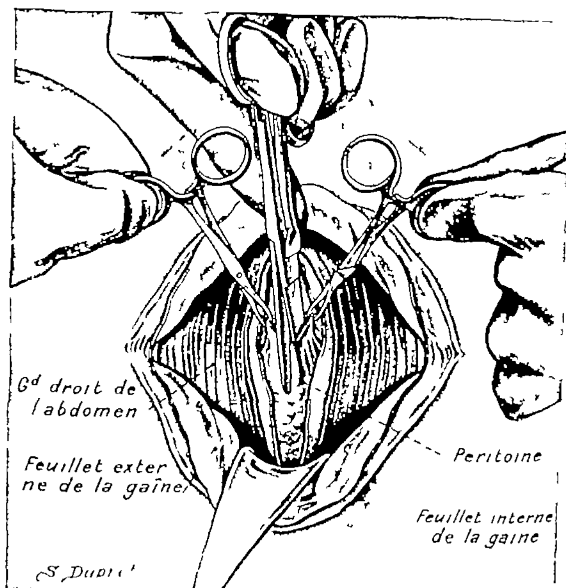


FIG 36.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA

Vertical division of the peritoneum Note the relaxation of the recti, due to placing under the shoulders of the patient a cushion, to bend the trunk slightly

Gd droit de l'abdomen=Rectus abdominis. *Péritoine*=Peritoneum *Feuillet externe de la gaîne*=External layer of the sheath. *Feuillet interne de la gaîne*=Internal layer of the sheath.

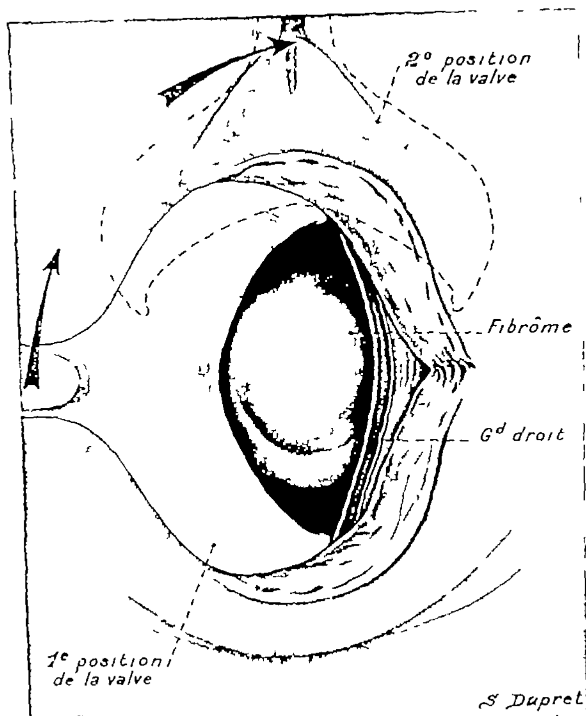


FIG 37.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

How Doyen's suprapubic retractor is introduced.

2° position de la valve=2nd position of the retractor *Fibrôme*=Fibroma. *Gd. droit*=Rectus. *1° position de la valve*=1st position of the retractor.

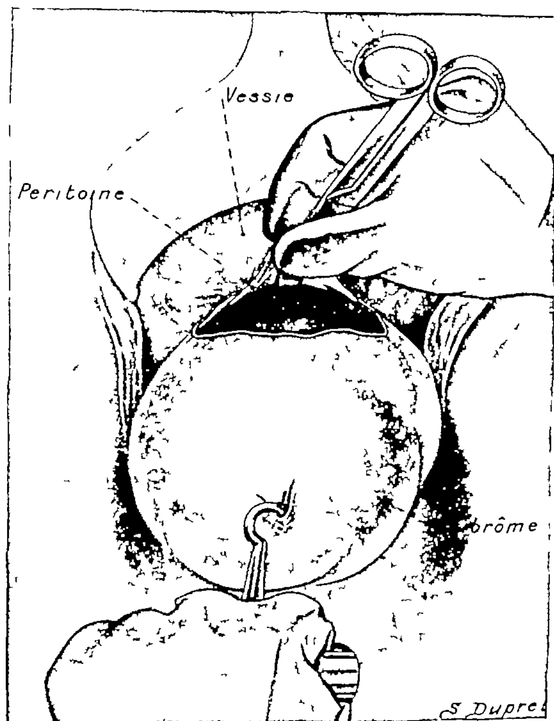


FIG 38 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

The fibroma is held by a hook. We are dealing here with a fibroma growing especially at the posterior wall of the pelvis the operator is obliged to attack it at first in front. Division of the vesico-uterine peritoneum

Vessie=Bladder *Péritoine*=Peritoneum. *Fibrôme*=Fibroma.

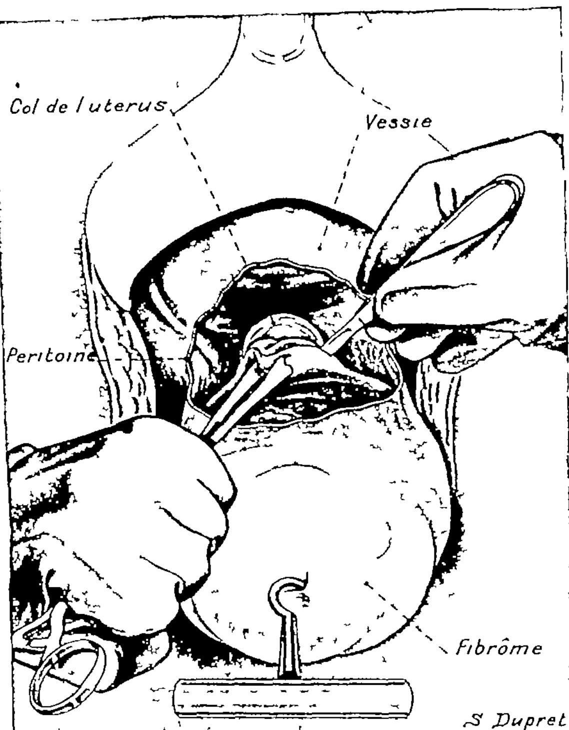


FIG 39 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

Primary dissection anteriorly The operator pulls on the uterine forceps with the left hand, whilst the right hand cuts with the knife The method which we have seen carried out by Thierry de Martel simplifies this stage. It consists of:
(a) Making a hole in the broad ligament in the avascular space, between the round ligament and the uterine artery
(b) Seizing the uterine artery close to the uterus, from above downwards.
(c) Dividing the uterine pedicle.
(d) Dividing the cervix uteri.

Col de l'utérus=Cervix uteri. *Vessie*=Bladder *Péritoine*=Peritoneum. *Fibrôme*=Fibroma.

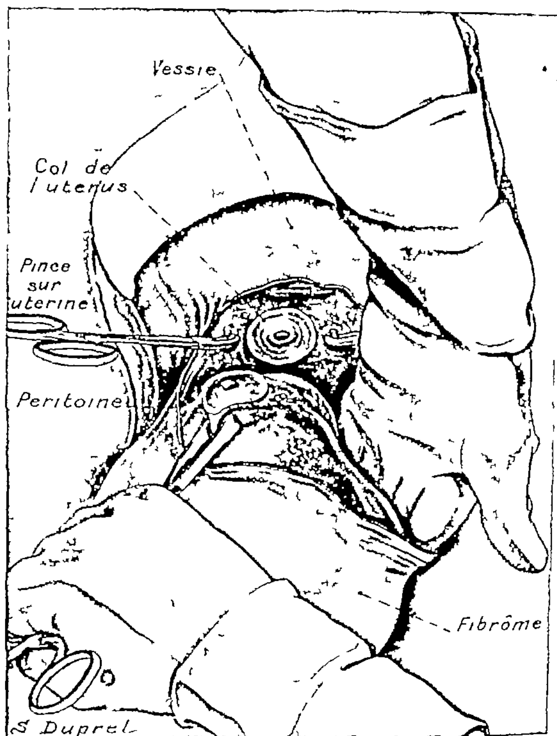


FIG 40 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

The cervix uteri is divided. The two uterine arteries are caught by J L. Faure's forceps. The hand frees the posterior surface of the fibroma which has grown especially posteriorly and thus prevented us from carrying out Thierry de Martel's procedure.

Vessie=Bladder *Col de l'utérus*=Cervix uteri. *Pince sur utérine*=Forceps on the uterine artery *Péritoine*=Peritoneum. *Fibrôme*=Fibroma.

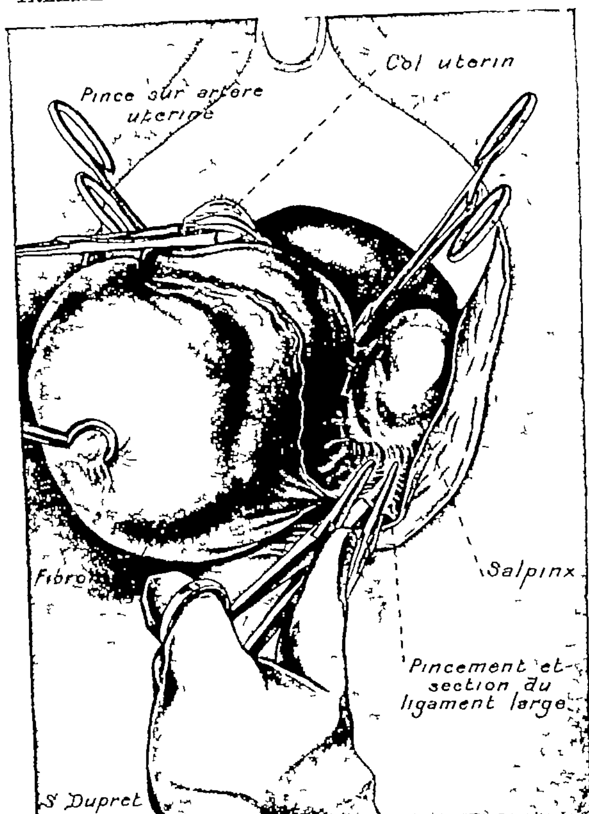


FIG 41 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

Division of the right utero-ovarian pedicle This pedicle is flattened out because of the presence of an hydro-salpynx.

Pince sur artère utérine=Forceps on the uterine artery *Col utérin*=Cervix uteri. *Fibrôme*=Fibroma. *Salpinx*=Salpynx. *Pincement et section du ligament large*=Seizing and dividing the broad ligament.

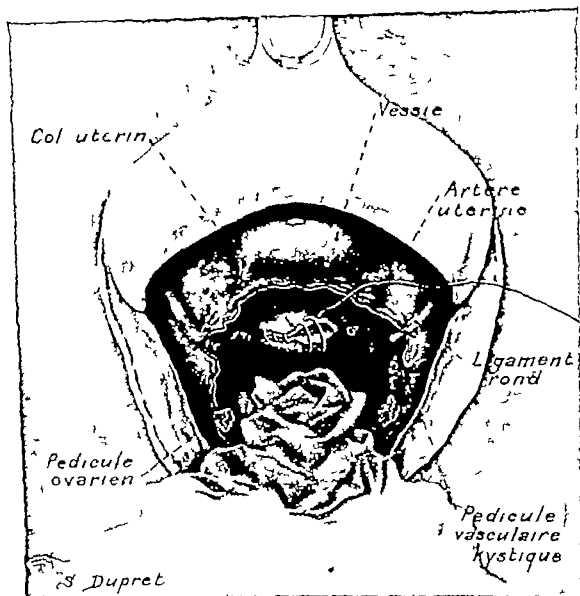


FIG 43.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

Appearance of the pedicles. Closure of the cervical stump. Owing to the transverse incision and the spinal anæsthesia, the viscera do not come into the wound.

Col utérin=Cervix uteri. *Vessie*=Bladder. *Artère utérine*=Uterine artery. *Ligament rond*=Round ligament. *Pédicule ovarien*=Ovarian pedicle. *Pédicule vasculaire kystique*=Cystic vascular pedicle.

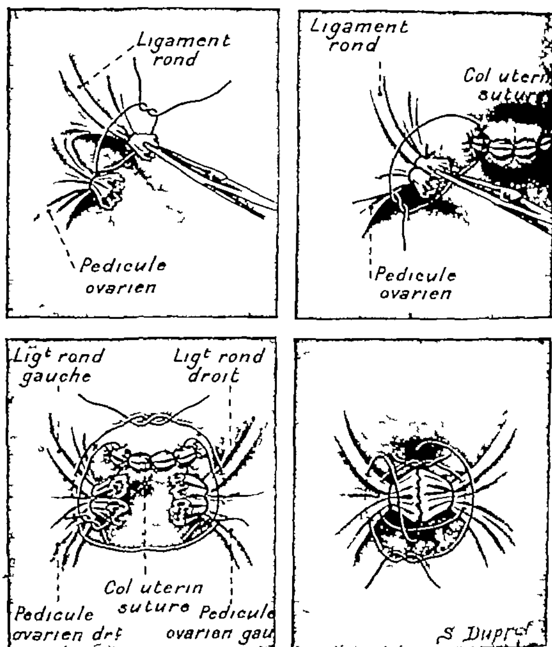
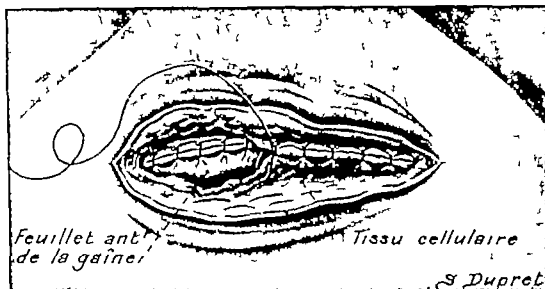


FIG 44.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA

Vaginal ligamentopexy How the pedicles of the round and utero-ovarian ligaments are made firm, and how they are fixed to the stump of the cervix to suspend the vagina, with a view to preventing secondary cystocele

Ligament rond=Round ligament. *Pédicule ovarien*=Ovarian pedicle. *Ligament rond*=Round ligament. *Col utérin suturé*=Cervix uteri sutured. *Pédicule ovarien*=Ovarian pedicle. *Ligt rond gauche*=Left round ligament. *Ligt. rond droit*=Right round ligament. *Col utérin suturé*=Cervix uteri sutured. *Pédicule ovarien drt*=Left ovarian pedicle. *Pédicule ovarien gau.*=Right ovarian pedicle.

Droit and *gauche* should be reversed in the plate.—TRANSLATOR.



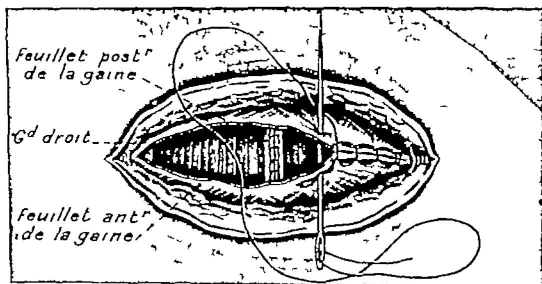


FIG 45 —ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

Suture of the wound after transverse laparotomy It is made with catgut

Feuillet antr de la gaine=Anterior layer of the sheath. *Tissu cellulaire*=Cellular tissue. *Feuillet postr de la gaine*=Posterior layer of the sheath. *Gd droit*=Rectus *Feuillet antr de la gaine*=Anterior layer of the sheath.

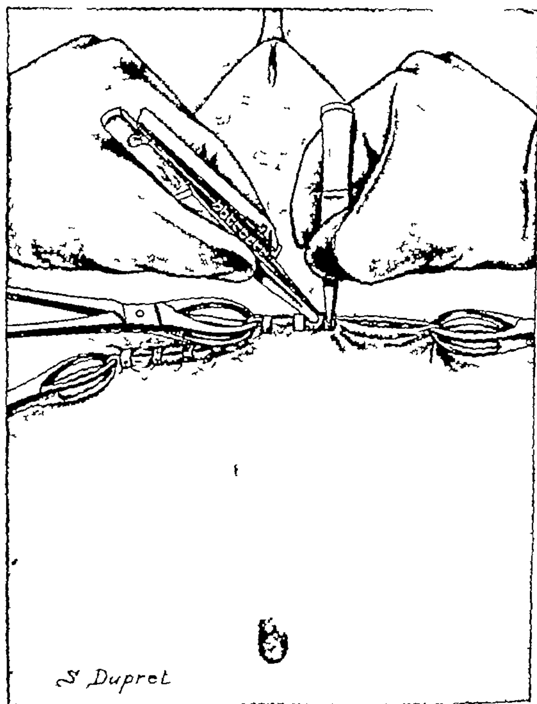


FIG 46.—ABDOMINAL HYSTERECTOMY FOR UTERINE FIBROMA.

Application of the clips to the skin. Note the position of the tissue forceps and the part they play during the application of the clips.

IV

FIBROMA AND PREGNANCY AT TERM

Complete Abdominal Hysterectomy

Sterility predisposes to uterine fibroma and uterine fibroma to sterility. In cases of impregnation, fibroma favours abortion and premature labour. But the majority of the small fibromata, especially the interstitial, allow of pregnancy being brought to a successful issue without incident.

On principle, every pregnancy co-existing with fibromata ought to be left to itself, up to term, but before reaching the ninth month the doctor ought to have solved the following problems:

Does the fibroma or does it not cause risks to the mother or to the child?

If in the negative, accouchement can be left to occur spontaneously; if in the affirmative, the patient should be sent to hospital, at the eighth and a half month, into a surgical block, and complete abdominal hysterectomy should be performed at term or at the commencement of labour.

Hysterectomy for fibroma and pregnancy at term, performed under spinal anæsthesia at the beginning of labour, is the mildest, simplest, and easiest of hysterectomies. It spares the life of the mother and of the child. The extreme laxity of the ligaments, the flaccidity of the abdominal wall, make it one of the simplest surgical operations. Spinal anæsthesia increases this flaccidity of the abdominal wall, and cares for the susceptibility of the liver and of the kidneys.

What are the fibromata which cause risk to the mother and to the child at the time of delivery?

1. Large intestinal fibromata of the body of the uterus which predispose to inertia uteri.

2. Fibromata of the lower segment which prevent or simply hinder the passage of the fœtus.

In these conditions complete abdominal hysterectomy at the beginning of labour, or at term, causes less risk to the mother and to the child than spontaneous delivery.

Special Indications

I During Pregnancy —On principle, do not intervene, except

(a) In cases of subperitoneal fibroma, which causes, by torsion, signs of peritonism, then perform myomectomy, which does not prevent the progress of the pregnancy

(b) In cases of large interstitial fibroma of the body, giving rise to serious signs of pressure These cases are very rare, and negligible in practice.

(c) In cases of fibroma of the cervix, growing into the vagina Resist the temptation to enucleate them vaginally, because the vaginal wound may be a cause of infection It is better to await the end of pregnancy and even the beginning of labour before performing complete abdominal hysterectomy A polypus of the cervix, markedly pediculated, is to be treated by torsion.

(d) After an abortion if the placenta be retained, do not curette or even give an intra uterine injection, and do not wait for infection, but send the patient to hospital and immediately perform abdominal hysterectomy, which in these conditions, is still easy and a mild operation. If some symptoms of infection already exist, still perform abdominal hysterectomy and then drain and irrigate drop by drop by Carrel's method

II During Labour —(a) When the fibroma is high up—i.e., above the inlet do not trouble about it, treatment is the same as in an ordinary confinement

(b) When the fibroma is in the pelvis. Do not let the labour continue, as it jeopardises delivery of the mother and of the child but send the patient to hospital and immediately perform abdominal hysterectomy

(c) Fibroma in the inlet. If there be a doubt of the possibility of delivery, it is useless to allow the labour to continue as it only exhausts mother and child immediately have recourse to abdominal hysterectomy, which causes only slight risk to both of them

3 *During Expulsion of the Placenta and Membranes*—(a) *Hæmorrhage* —No treatment tampon, or obstetric manipulations, but perform immediate abdominal hysterectomy

(b) *The Placenta and Membranes cannot* [illegible] d —The placenta is adherent no obstetrical manipulati[illegible] abdominal hysterectomy

Operative Technique —The surgeon will see that the midwife who has to receive the child is in attendance, with a sterilised cloth in her hands

1 *Incision of the Abdominal Wall from the Umbilicus to the Pubis,* as for any large abdominal hysterectomy

2 *Incision of the Uterus* —The lips of the abdominal wound are protected by compresses from blood or from the amniotic fluid Incise the uterus at the thinnest part, outside the fibroma, if healthy parts of the uterus exist The incision should always be prolonged on the thin and on as normal walls as possible, so that the child may be delivered easily The incision should be downwards towards the cervix, provided the uterine tunics are thinnest in this direction, hence the direction of the incision is entirely guided by the presence of a normal or thin uterine wall, it is made by a knife and enlarged by scissors.

The assistant will watch for the moment when, the child being extracted, the uterus ought immediately to be brought outside the abdominal cavity In the case which serves for our model, we first incised the uterine wall, and then the fœtal membranes, but it appears to us to be a matter of indifference, if we incise the wall and the membranes at the same time Contamination of the edges of the wound and of the abdominal cavity by the amniotic liquid, must be avoided

3 *Delivery of the Child* —This operation is performed as in every case of Cæsarean section the operator introduces his hand into the uterine cavity he seizes the feet and withdraws the child, as in a breech presentation, the buttocks and the body are extracted, and the arms, one after the other, are disengaged Two fingers are passed into the mouth hook the inferior maxilla, and draw on the head The uterine incision ought always to be very large, since the uterus is sacrificed The child being delivered forceps are applied on the cord, which is cut between the child and the placenta the child is placed on a sterilised cloth, if the child be apnœic, the midwife does what is necessary to revive it, and not the operator

4 *Hysterectomy* —Do not trouble about the placenta which remains in the uterus, tampon the uterus with a compress and close it temporarily with two tissue forceps Change the towels used in the field of operations and apply fresh ones to the abdomen, bring out the uterus which is easy if the wall be flaccid and perform hysterectomy which is simple in the circumstances (laxity of the ligaments and flaccidity of the abdominal wall) Change the gloves,

and insert a Doyen's suprapubic retractor protect the peritoneum with an abdominal compress, and then attack each of the broad and round ligaments. With one finger, break into the avascular space of each broad ligament, tie and cut the round ligament and the utero-ovarian pedicle, look for the uterine artery and cut it, and incise afterwards in front the peritoneum of Douglas' pouch and the utero-sacral ligaments, to which two of J L Faure's forceps are to be applied. Separation of the vagina

5 *Close the Vagina.*—Non penetrating continuous catgut suture.

6 *Vaginal ligamentopexy*—*i e.*, fixation of the ligaments in the vaginal suture, so as to avoid secondary prolapse of the vagina.

7 *Peritonisation.*

8 *Suture of the abdominal wall*, at one level with bronze wire or at two levels thus

(*a*) Deep level, including the aponeurosis and the serous coat, with a continuous catgut No 1 suture, then five or six stitches with strong silk worm gut abandoned in the tissues *

(*b*) Michel's clips on the skin.

Complete hysterectomy is milder than a Cæsarean section, because there is no risk of hæmorrhage, or of uterine or of peritoneal infection.

To sum up, in all cases of fibroma complicated with pregnancy, the doctor ought to wait preferably for term, but be alive to sending the patient suddenly to hospital at any time when term has arrived, whatever the case, the patient should be placed in a surgical hospital, because she runs the chance of having to submit to abdominal hysterectomy, an easy and mild operation for mother and child.

* The chief of these stitches are cut close to a double knot (*perdus*)—TRANSLATOR.

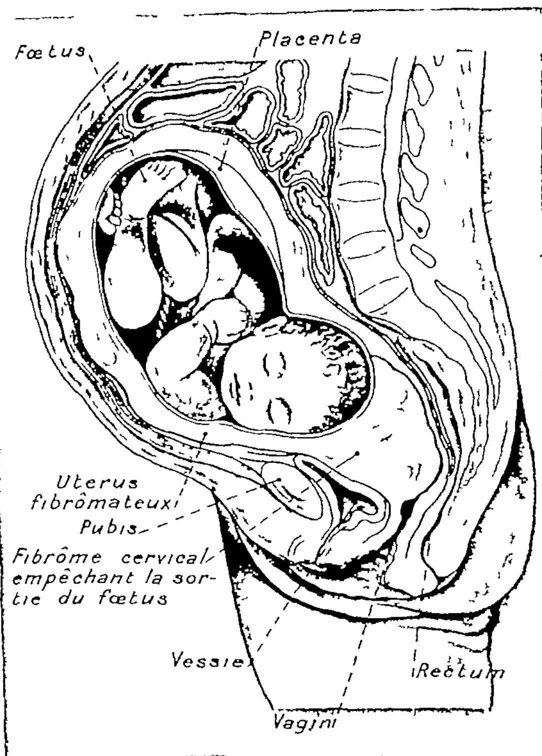


FIG 47.—FIBROMA AND PREGNANCY AT TERM COMPLETE ABDOMINAL HYSTERECTOMY

Diagrammatic section of the case which has served as a model. Labour has begun. Delivery is impossible because of a pelvic fibroma blocking the way

Fœtus=Fœtus. *Placenta*=Placenta. *Utérus fibromateux*=Fibroma of the uterus. *Pubis*=Pubis. *Fibrome cervical empêchant la sortie du fœtus*=Fibroma of the cervix, preventing delivery of the child. *Vessie*=Bladder. *Rectum*=Rectum. *Vagin*=Vagina.

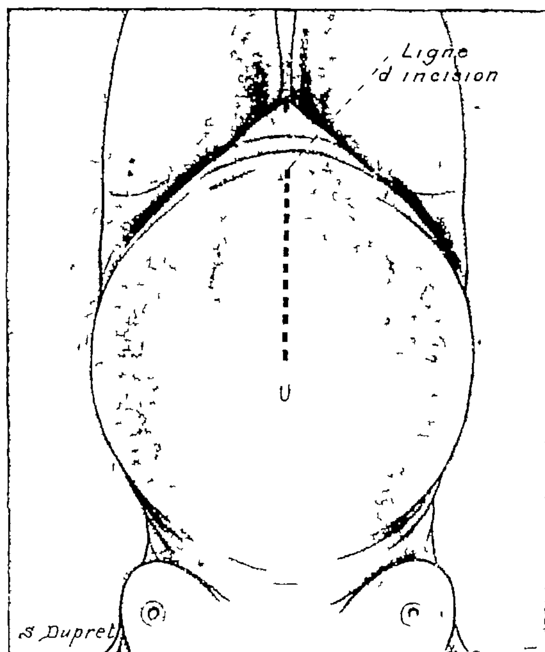


Fig. 48.—Fibroma and Pregnancy at Term. Complete Abdominal Hysterectomy.
Incision of the abdominal wall.

Ligne d'incision = Line of incision.

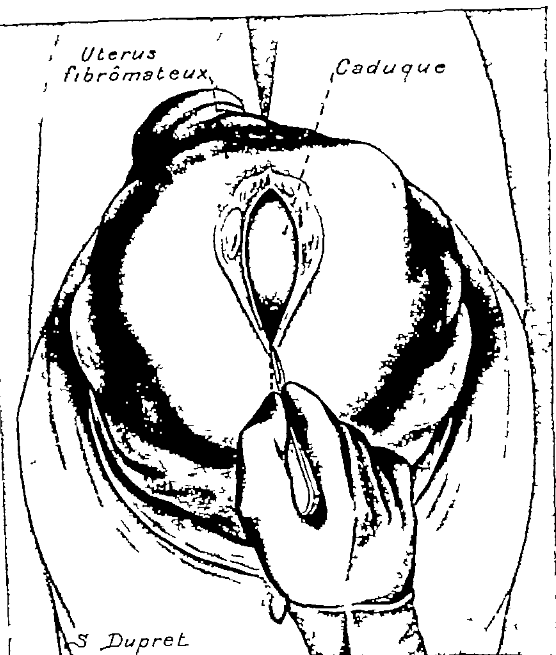


FIG 49 —FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY

The uterus is opened before being emptied, because the incision would be too large The compresses, not shown here, protect the abdominal serous coat from the discharge or from contact with the uterine contents.

Utérus fibromateux=Fibroma of the uterus. *Caduque*=Decidua.

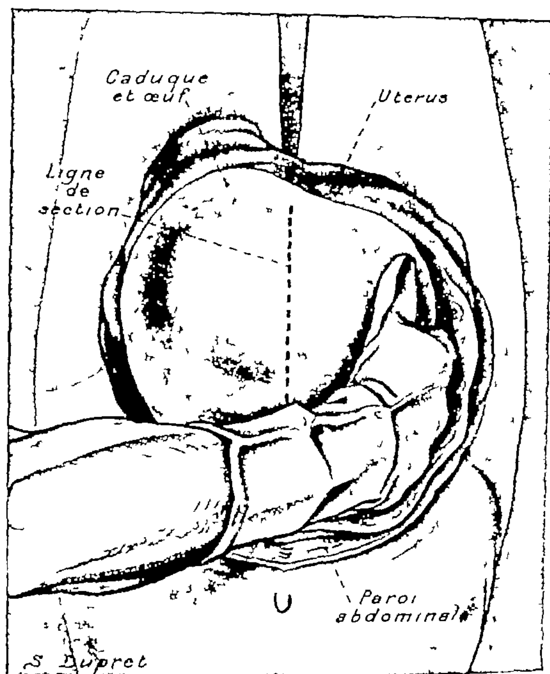


FIG 50 —FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY

The operator introduces his hand into the uterus and frees the child; this stage is not absolutely necessary; he can at once incise the membranes.

Caduque et œuf—Decidua and fœtus. *Utérus*—Uterus. *Ligne de section*—Line of incision. *Paroi abdominale*—Abdominal wall.

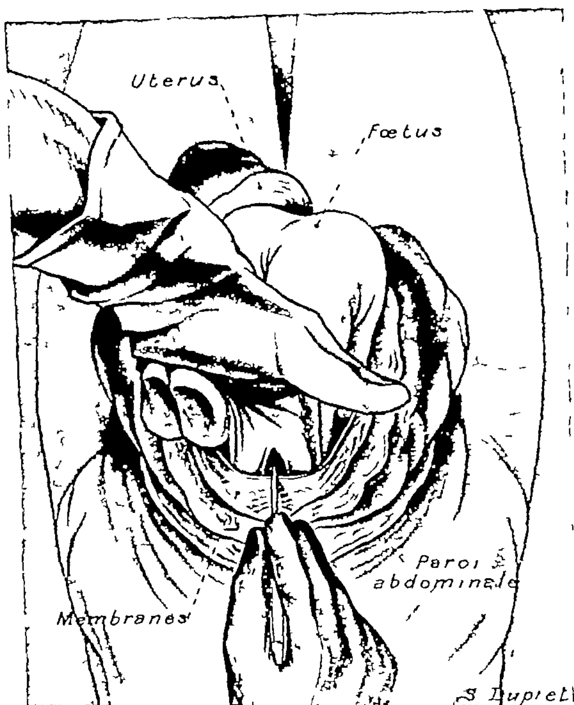


FIG 51.—FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY
Division of the membranes.

Utérus=Uterus. *Fœtus*=Fœtus. *Membranes*=Membranes.
Paroi abdominale=Abdominal wall.



Fig 52 —Fibroma and Pregnancy at Term Complete Abdominal Hysterectomy
Accouchement and division of the cord.

Utérus = Uterus. *Placenta* = Placenta. *Cordon* = Cord.

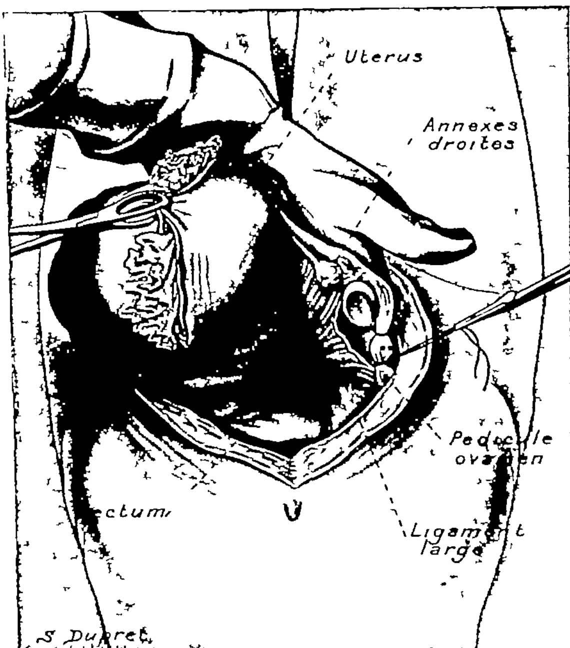


FIG 53.—FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY

Freeing the right utero-ovarian pedicle.

Utérus = Uterus. *Annexes droites* = Right adnexa *Rectum* = Rectum. *Pédicule ovarien* = Ovarian pedicle. *Ligament large* = Broad ligament.

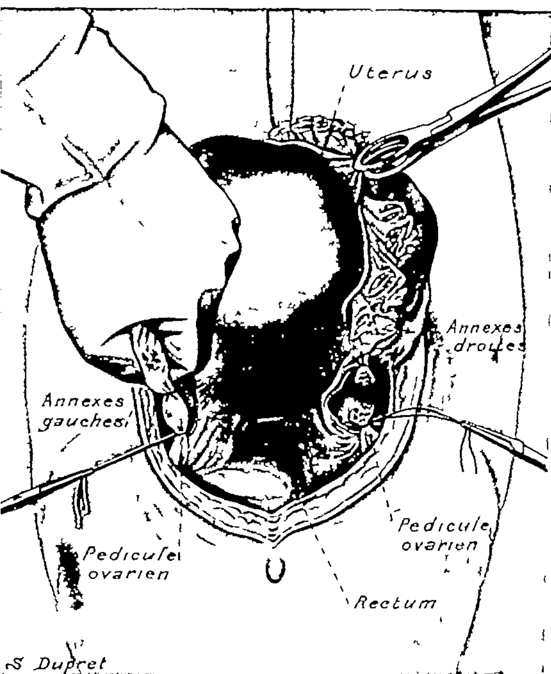


FIG 51 —FIBROMA AND PREGNANCY AT TERM COMPLETE ABDOMINAL HYSTERECTOMY

Division of the left utero-ovarian pedicle.

Annexes gauches =Left adnexa *Pédicule ovarien* =Ovarian pedicle *Utérus* =Uterus
Annexes droites =Right adnexa *Pédicule ovarien* =Ovarian pedicle *Rectum* =Rectum

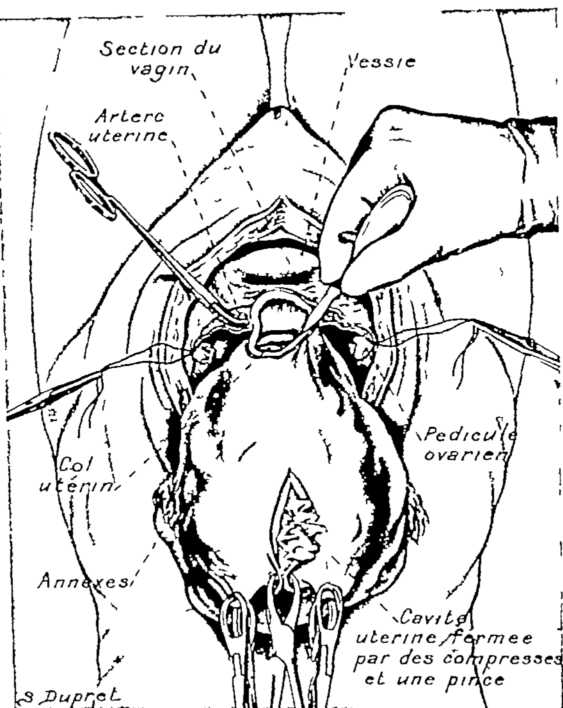


FIG 55 —FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY

Division of the anterior fornix of the vagina. J L. Faure's forceps applied to the left uterine artery

Section du vagin=Division of the vagina. *Vessie*=Bladder *Artère utérine*=Uterine artery *Col utérin*=Cervix uteri. *Pédicule ovarien*=Ovarian pedicle. *Annexes*=Adnexa. *Cavité utérine fermée par des compresses et une pince*=Uterine cavity closed by compresses and forceps.

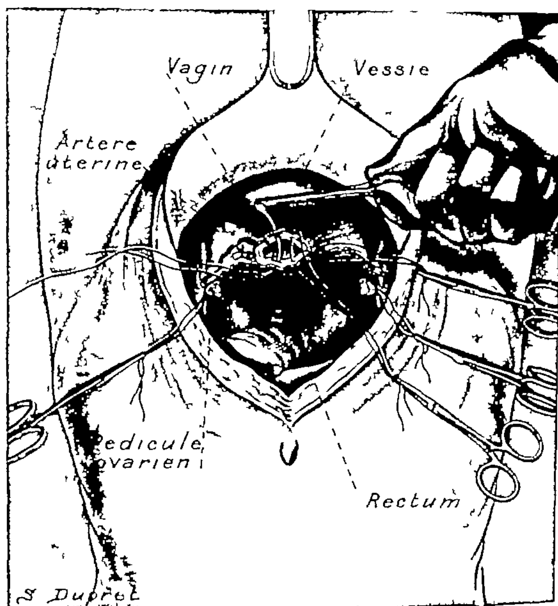
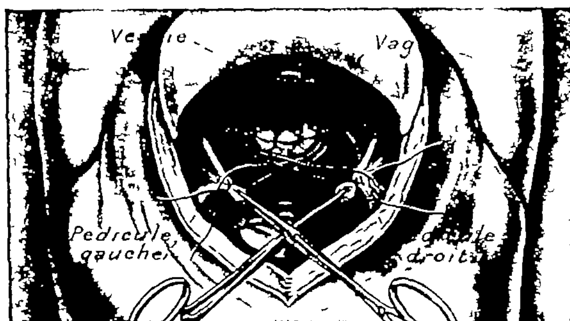


FIG 56.—FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY. Closure of the vagina. J. L. Faure's needle does not pierce the vaginal mucosa.

Vagin=Vagina. *Vessie*=Bladder. *Artère utérine*=Uterine artery. *Pédicule ovarien*=Ovarian pedicle. *Rectum*=Rectum



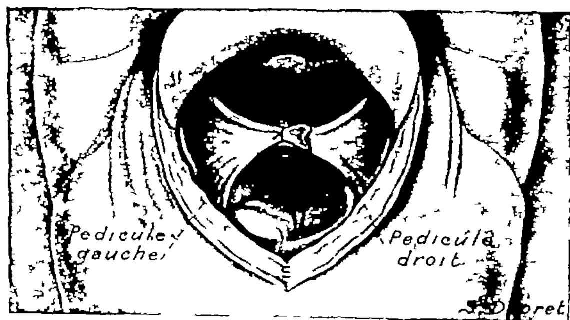


FIG 57 —FIBROMA AND PREGNANCY AT TERM COMPLETE ABDOMINAL HYSTERECTOMY

The vagina is closed. The pedicles have been brought up and fixed to the vagina to avoid prolapse of the latter

Vessie = Bladder *Vagin* = Vagina *Pédicule gauche* = Left pedicle. *Pédicule droit* = Right pedicle.

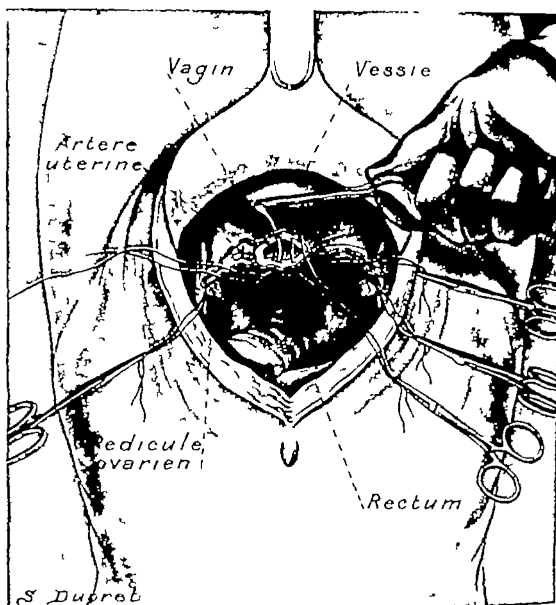
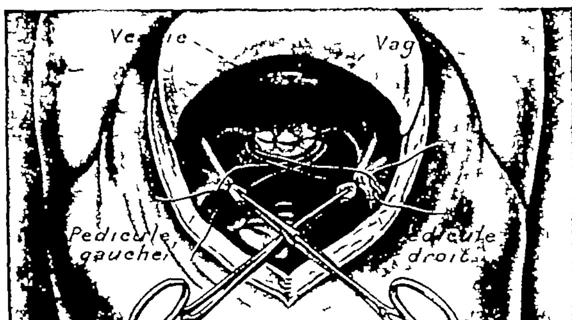


FIG 56.—FIBROMA AND PREGNANCY AT TERM. COMPLETE ABDOMINAL HYSTERECTOMY Closure of the vagina. J L. Faure's needle does not pierce the vaginal mucosa.

Vagin=Vagina. *Vessie*=Bladder *Artère utérine*=Uterine artery *Pédicule ovarien*=Ovarian pedicle. *Rectum*=Rectum.



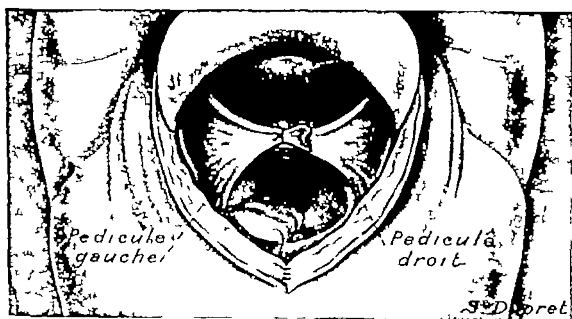


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The vagina is closed. The pedicles have been brought up and fixed to the vagina to avoid prolapse of the latter

Vessie = Bladder *Vagin* = Vagina *Pédicule gauche* = Left pedicle. *Pédicule droit* = Right pedicle.

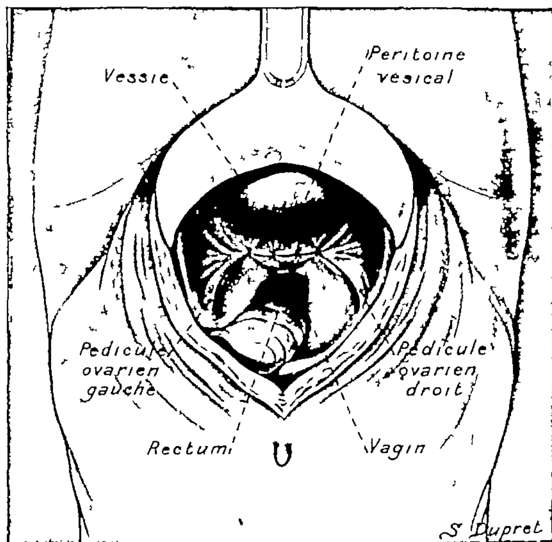


FIG 58 —FIBROMA AND PREGNANCY AT TERM COMPLETE ABDOMINAL HYSTERECTOMY

Vaginal ligamentopexy the ligamentous pedicles are fixed to the vaginal cul-de-sac. Peritonisation of the pelvis.

Vessie=Bladder *Péritoine vésical*=Vesical peritoneum. *Pédicule ovarien gauche*=Left ovarian pedicle *Pédicule ovarien droit*=Right ovarian pedicle. *Rectum*=Rectum. *Vagin*=Vagina

V

NEPHRECTOMY FOR CANCER OF THE KIDNEY

We have seen cancers of the kidney not operated upon, grow with extreme slowness and kill, three, four, and even five years after a first hæmaturia, we have seen others develop so as to become inoperable in some months We operated upon four years since, within six weeks, two cancers of the kidney of the same size, in men of nearly the same age The one died six months later of generalised cancer of the abdomen, the other is quite well and leads an active life

Every suspectedc ancer of the kidney should be operated upon, as early as possible If the operator, after intervention finds some neoplastic excrescences in the veins, the prognosis should be a very cautious one The presence of malignant glands along the large vessels even if they be removed, enjoins a bad prognosis. Removal of the suprarenal capsule has seemed to us to aggravate the immediate prognosis.

Cancer of the kidney consists of two forms

(*a*) Infiltrating, in which the appearance of the organ is not altered

(*b*) Nodular the commonest form in which the tumour grows at the expense of one part of the kidney, one-third one-half, or three-quarters of the organ remaining recognisable at one part of the tumour

There is frequently found in the same kidney a primary malignant mass and other smaller nodules on the surface. The renal capsule is intact in the parts where the renal parenchyma is preserved, and often even around the neoplasm in front of which it forms a barrier which limits, for some time, invasion

At the beginning of the disease the kidney still only slightly enlarged preserves its connections, but by degrees, as the mass develops it becomes abdominal still maintaining its connections with the lumbar region At the same time it comes in contact with the neighbouring organs aorta, inferior vena cava, and adheres to them.

The cancer of the kidney which has served as a model for this article shows the connections it has formed with the left colon Pressure had even provoked passing intestinal obstruction Whilst growing towards the anterior abdominal wall, the tumour spreads out the meso-colon, becoming covered by its internal layer and the colic vessels therein This fact shows that, to decorticate the kidney and gain access to the hilus colo-parietal dissection should be performed, as for a colectomy This separation of the kidney from the colon is usually very easy, if care be taken not to injure the meso-colic vessels

Generally the cancerous kidney descends each time, also, a voluminous growth is found hidden under the ribs, as was the case in the patient whose operation is drawn, the existence of early *adhesions can be diagnosed (Albarran)*

The growth, during its development, adheres to the neighbouring organs, these adhesions are of two kinds inflammatory (more frequent) and neoplastic.

At the upper part of the renal cavity, the neoplasm is sometimes difficult to separate from the liver and diaphragm on the right, and the spleen on the left, anteriorly, adhesions to the peritoneum and to the intestine are rare. The most formidable are those contracted by the pedicle to the suprarenal capsule and to the large vessels. As Legueu and Albarran have shown, the suprarenal capsule in the adult is situated internally to the upper pole of the kidney, close to the renal vein If the operator believe it ought to be removed it should be done carefully not to tear the renal vein We always leave it, if it appear healthy

The most dangerous adhesions are those of the right kidney to *the vena cava The operator may* be *obliged to remove* the glands, to dissect it for many centimetres, even resect a part of its walls, and make a lateral suture, and this particularly complicates the operation. The connections of the adhesions to the aorta are less dangerous. It is *generally* easy *to* separate the *glands from the* aorta by careful use of the grooved director

The operator runs more risk of tearing these vessels at the time of decortication of the kidney itself. The adhesions, moreover, uniting the neoplasm of the kidney to the renal vein or aorta, can tear these vessels when traction is exercised on the kidney, which may bring about immediate death from hæmorrhage The operator ought also to avoid the accessory arteries (capsular, spermatic, polar) which go to the tumour Lastly, he should beware of *the*

large veins, which form a groove on the surface of the growth and may reach the size of a finger During decortication of the tumour, the operator may have to form many additional pedicles, before tying the renal pedicle. In the case represented in the plates, the vascularity round the pedicle was such, that we had to use a Mickulicz' drain in order to finish the operation quickly

Dissemination and Centralisation of Renal Cancers

DISSEMINATION BY CONTINUITY —The capsule proper of the kidney forms for some time a barrier which limits the spread of the tumour It should, therefore, be always removed with the tumour, be careful not to make a subcapsular nephrectomy The pelvis and the ureter may be attacked by the growth In certain cases, an offshoot of the tumour blocks the pelvis, from which results uro-nephrosis and hæmato-nephrosis.

The suprarenal capsule is frequently invaded by tumours situated in the upper half of the kidney In similar cases, it is obvious the capsule must be removed. But there should be no illusion as regards the post-operative prognosis. In two cases, where knowingly the capsule had been removed with the growth, symptoms of acute collapse occurred the evening of the operation

The peri renal tissues are often invaded, and cancerous nodules may be found therein. Most often however, the adhesions are purely inflammatory It is unfortunately impossible, with the naked eye, to distinguish the nature of the adhesions. If the patient s state permit it is always better to remove the cellulo-fatty envelope of the kidney (Israël) at a special stage.

DISSEMINATION BY GRAFTS — Cancerous grafts have been observed in the pelvis of the kidney, in the ureter and in the bladder, at the ureteral opening In 1913 in a subject suffering from hæmaturia cystoscopy revealed a fungoid tumour of the opening of the left ureter The tumour was treated by the high frequency current, two months later, we found a cancer of the kidney, this latter much prior to the vesical growth, had produced a graft at the meatus of the ureter

DISSEMINATION BY THE GLANDS —Very large cancers of the kidney may have no glandular enlargement whilst small tumours may be accompanied by considerable glandular invasion. The neighbouring glands of the hilus are the first attacked, and the infection can extend along the vena cava to the mediastinum.

The cancer of the kidney which has served as a model for this article shows the connections it has formed with the left colon. Pressure had even provoked passing intestinal obstruction. Whilst growing towards the anterior abdominal wall the tumour spreads out the meso-colon, becoming covered by its internal layer and the colic vessels therein. This fact shows that, to decorticate the kidney and gain access to the hilus, colo-parietal dissection should be performed, as for a colectomy This separation of the kidney from the colon is usually very easy, if care be taken not to injure the meso-colic vessels.

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In the tumour which served as a model for this article, the glands of the hilus were removed after ligature of the vein and of the renal vessels, with the capsule. The histological examination showed they were exclusively formed of lymphoid cells

Dissemination by the Veins —Alterations of the venous system are frequent in cancer of the kidney Invasion of the veins can produce pressure symptoms as varicocele, or the formation of clots and give rise to emboli.

Invasion of the veins by the growth and the production of emboli gives rise to metastases. After nephrectomy, the surgeon should open the renal vein, if it, or its principal branches, show cancerous excrescences, the future prognosis is serious.

During its liberation the operator should handle the renal tumour gently and very carefully There is a risk, moreover, of tearing the adherent veins and of producing terrible hæmorrhage

Operative Technique of Lumbar Nephrectomy (extra-peritoneal) for Tumour

If the tumour be especially in the lumbar region and not very large, it should be reached by the lumbar route The operator ought to call to mind the possibility of adhesions of the new growth to the diaphragm and to the vessels of the pedicle, possibly brittleness of the pedicle the invasion of the glands, and the likelihood of the presence of vegetations in the renal veins The incision ought always to be large In like cases, we often employ the incision of Louis Bazy

1 Incision (Guyon's) —It commences posteriorly at the costo-lumbar angle passes forwards, and 4 or 5 centimetres beyond the prominence of the iliac crest and beyond the antero-superior iliac spine.

2 Decortication of the Kidney —It should always be extra capsular The operator whilst passing round the malignant kidney, from above downwards on its surface, should avoid tearing the large veins which cut through it if he come across a large vessel he cuts it between two ligatures without waiting until the end of the operation, for the later manipulations may drag on the forceps and produce serious hæmorrhages which delay the operation If the superior extremity of the tumour adhere to the diaphragm make a subperiosteal resection of the eleventh and twelfth ribs in order to have space to reach the extremity

3 Division of the Ureter —It should be cut between two ligatures by the thermo-cautery Directly the duct is cut, it should be *followed from below upwards, as far as the hilus, before* enucleating the kidney

4 Enucleation of the Tumour —The operator must take care not to exercise the slightest traction on the tumour for fear of adhesions with the veins of the hilus, and of hæmorrhagic or of neoplastic emboli

5 Ligature of the Pedicle —In order to produce a thin pedicle, the kidney must be luxated, follow its contours, reach the vessels and strip their surface with a tampon held by forceps Do not be afraid of dividing the renal pedicle in order to tie the vessels separately If the pedicle be thin and supple, it can be tied directly without previously picking it up by forceps, if the pedicle can be made into one mass employ two clamps. Apply two clamps, not one, to the renal pedicle, side by side, or better, separated from each other by a few millimetres, if possible 1 centimetre (long pedicle) A ligature (catgut) is passed between the large vessels (aorta vena cava) and the first clamp Whilst the catgut is being tied, an assistant withdraws the first clamp, nearest the thread The thread is tightened in the groove made by the first clamp, which has been withdrawn, the operator then passes a second thread above the first, which thread spontaneously falls into the groove created by the first ligature Whilst this second ligature is being tied, the operator withdraws the second clamp (that in contact with the hilus of the kidney) In this way, he is not afraid of the ligatures slipping When this double ligature is applied the operator divides with scissors the pedicle about 1 centimetre from the ligature The pedicle is touched with the thermo-cautery or with tincture of iodine, and left to itself.

6 Extirpation of the Remains of the Fatty Capsule —The operator examines the wound, and removes, as well *as he can, all* that remains of the fatty capsule This stage is as important as clearing out the axilla in cancer of the breast' (Israël) The fatty tissue is drawn out by tissue-forceps and excised by scissors If the suprarenal capsule be not taken away with the kidney, Albarran recommends its removal. Personally we fear its extirpation, if the suprarenal be soft. In fact in two cases where we removed it wittingly (was it a coincidence ?) we noted severe shock, and the

patient died during the day This is not astonishing, seeing the physiological role of this small organ

7 EXTIRPATION OF THE GLANDS —The glands must first be removed from the pedicle, then along the large vessels and also behind, from the pillars of the diaphragm. Extirpation of the glandular masses is easy, by making use of the grooved director and dissecting forceps. There is no danger, if working carefully, it simply requires a little patience If the glands come from the pelvis or from the diaphragm, it is better to leave them, the operator will never succeed in removing them completely

8 CLOSURE OF THE WOUND —If the bottom of the wound be dry, it is preferable to drain with one or two 'cigarettes" (cellophane or rubber tube), with abundant discharge, tampon In this last case, tie into the gauze some Carrel's tubes so as to drain drop by drop and make its removal easy some days later

Transperitoneal Nephrectomy — This method is applicable to large tumours. The lumbo-abdominal route which we employ, owing to the transverse incision, is both extra and intra peritoneal, more extra than intra peritoneal

1 INCISION OF THE ABDOMINAL WALL —We have always used the transverse incision of Péan, or of Louis Bazy, an incision which in certain cases begins at the external border of the sacro-lumbar mass and is continued in front to the middle line. In the case illustrated the incision started from the mid axillary line. This incision gives access at the same time to the lumbar and the peri toneal regions. It also allows the extra peritoneal surface of the kidney and its anterior peritoneal surface to be exposed, this surface is usually covered by the descending colon the meso-colic vessels, as also by the anterior layer of the meso-colon.

2 SEPARATION OF THE COLON FROM THE KIDNEY —When the peritoneal cavity is opened the intestinal loops are reflected by a compress from the healthy kidney The descending colon is ex posed The operator divides the parietal peritoneum with a knife, some centimetres outside the colon, in order to separate the colon from the parietal layer of the peritoneum which, in the present case, is a separation of the colon from the kidney He pushes back at the same time the colon and the internal layer of the meso-colon ... -olic vessels, with the fingers or with a compress.

3 ENUCLEATION OF THE TUMOUR —The peritoneal layer which is suspended on the anterior surface of the renal tumour is liberated with the fingers, or with the compress, so as to detach, as well as possible, the kidney internally and externally, the operator leaves on the tumour the peri renal veins which spread over it. Afterwards, he detaches the lower part of the renal tumour externally, finishing by the upper and inner part, which is more difficult to enucleate Most often, he comes across vascular adhesions or large veins which he has to tie and cut, he, in this way, reaches the pedicle

4. LIGATURE OF THE URETER —If, during decortication of the lower part of the tumour, the ureter is visible, which is desirable, it is separated and cut between two ligatures by the thermo-cautery The operator then catches the tumour by its central end and decorticates it up to the vascular pedicle, he thus isolates the pelvis and reduces the pedicle to renal vessels If the ureter be not found, he exposes it at the pedicle, and ties it between two ligatures. He is rarely obliged to tie the ureter *en bloc* with the remainder of the pedicle and the vessels.

5 LIGATURE OF THE VASCULAR PEDICLE —When the pedicle has been separated as well as possible, enucleate the tumour by drawing on it, and complete its decortication. Generally it is better to tie, first, the vascular pedicle and to commence with the vein, to prevent embolism and laceration of the vessels during the manipulations of enucleation of the tumour The pedicle is then to be well separated and a Deschamps needle is to be passed behind each vessel Afterwards look for the glands, which we try to separate and to bring away with the tumour, otherwise they must be removed secondarily During division of the pedicle, avoid discharge of venous blood into the wound, as this might produce inoculation. If the two vessels be tied at the same time it is better to apply two ligatures, one above the other

6 HÆMOSTASIS OF AND CLEANING THE RENAL CAVITY —When the kidney has been removed and the pedicle tied there remain some fragments of the peri renal tissue in the broken cavity Although the majority of the débris may be purely inflammatory, it should be removed by ring forceps and scissors We have already spoken of the danger, we believed, was due to the removal of the suprarenal capsule, if however it be infiltrated it must be removed.

The removal of the glands is sometimes made at the same time as removal of the tumour, but more often it is carried out, when the

operation is finished The glands often adhere on the right to the vena cava removal is easily made by the grooved director and dissecting forceps If the glands be intimately adherent to the vena cava it may be necessary to excise a part of the wall of the vein

If the glands be too large, or too adherent, the vena cava can certainly be tied twice and the portion with the glands removed between two ligatures, but in like cases, it is better to withhold one s hand Nothing can cure a growth presenting such conditions, the future results are not in accord with the risks the patient runs.

7 Closure of the Abdominal Cavity —The operator marks out the edges of the peritoneum and then sutures them with care

8 Closure of the Abdominal Wall —The anterior part of the abdominal wall corresponding to the peritoneum is sutured separately The operator drains the posterior part of the wound, which corresponds to the cavity behind the kidney, and is extra peritoneal, with two drainage tubes or with a cigarette of cellulose (rubber tube cellophane)

In the case illustrated, we have ligatured the vessels before completely decorticating the tumour This method, theoretically a good one is not always easy our aim being to avoid hæmorrhage during decortication. But hæmorrhage was not warded off because of the peri renal venous network which caused an abundant flow of hæmorrhage and compelled us to tampon The capsular arteries which we have tied, often exist, and require the attention of the operator

Albarran says ' There would be an advantage in tying the pedicle or applying forceps to it before decortication, if it were easy, but it is not It is easier to say, separate the peritoneum which covers the anterior part of the tumour, reach the tumour and place there a clamp, than to do it. When the tumour has not been previously decorticated it is difficult to form a pedicle. More often, it ends in seizing *en bloc* the vessels of the ureter "

Operative Difficulties

Peritoneal Adhesions —If the peritoneum be very adherent to the tumour it must be excised

Wounds of the Intestine —If it be stripped and made blood less, it must be repaired Very rare occurrence.

LACERATION OF THE TUMOUR.—This complication is much more serious. The renal growth sometimes shows some friable parts which tear under the fingers It bleeds freely, and inoculation is probable. In these cases, a temporary tampon must be applied, and then a clamp placed on the vessels The prognosis is grave Recurrence is very rapid and often the patient dies of shock

HÆMORRHAGE DURING DECORTICATION.—Abundant discharge from the cavity occurred in the case illustrated, notwithstanding the ligature of the vessels An enormous network existed round the tumour We had to give up tying the bleeding points and had to tampon

WOUND OF THE PEDICLE NEAR THE VENA CAVA.—This dangerous accident can occur when traction has been exercised on the tumour and when the tumour, enucleated to a great extent, and drawn to the edges of the wound, slips out of the hands and falls. The patient may die on the table With coolness, compresses and forceps the surgeon may pull through, but it is better to avoid it by care and gentleness at the time of decortication.

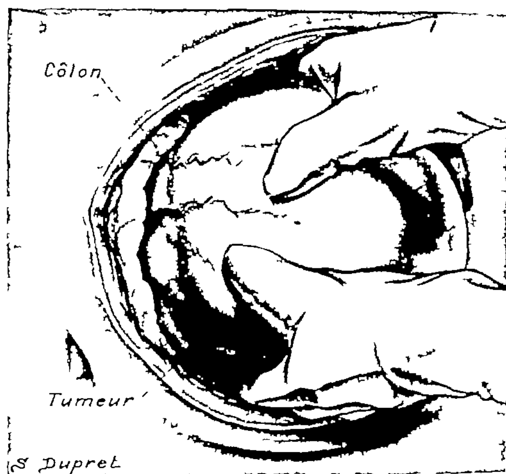


Fig 61 —Trans-peritoneal Nephrectomy for Cancer of the Kidney

The colon has been freed. The hand passes partly round the tumour

Côlon=Colon. *Tumeur*=Tumour

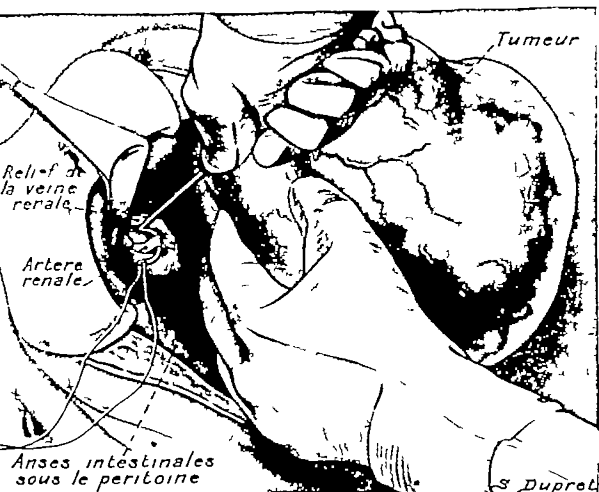


FIG 62 — TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

The tumour is completely freed at its inferior pole and on its internal border The operator attacks the hilus to avoid malignant grafts by the renal vein Ligature of the artery will be followed by that of the vein.

Relief de la veine rénale = Outline of the renal vein. *Tumeur* = Tumour *Artère rénale* = Renal artery *Anses intestinales sous le péritoine* = Intestinal loops under the peritoneum.



FIG 63 —TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY
Liberation of the left ureter which will be cut as far away as possible, between two ligatures.

Tumeur—Tumour *Uretère gauche*—Left ureter.

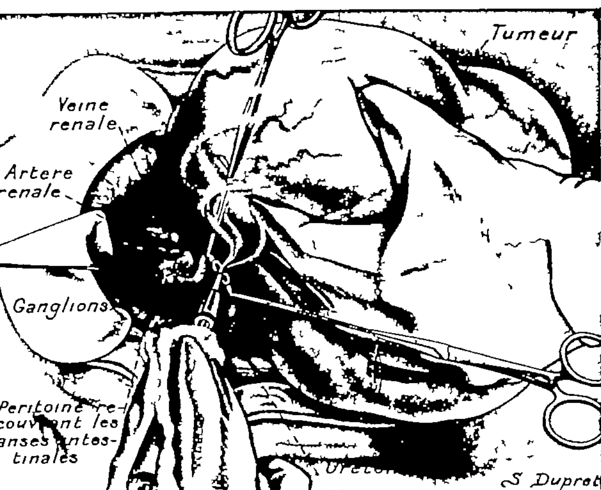


FIG 64 —TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

Division of the ureter by the thermo-cautery The operator tries to take away with the tumour the cellulo-glandular mass accompanying the renal pedicle. The superior pole of the kidney has not yet been separated. These manipulations are facilitated by first raising the inferior pole

Veine rénale=Renal vein. *Tumeur*=Tumour *Artère rénale*=Renal artery *Ganglions*=Glands. *Péritoine recouvrant les anses intestinales*=Peritoneum covering the intestinal loops. *Uretère*=Ureter

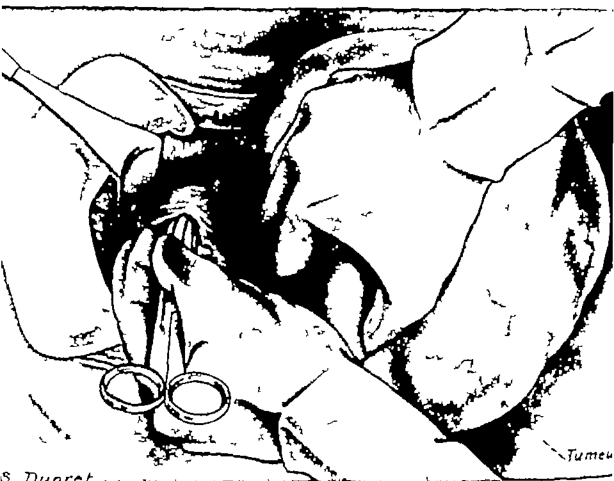


Fig. 65.—Trans-peritoneal Nephrectomy for Cancer of the Kidney

Liberation of the superior renal pole, which corresponds to the neighbourhood of the splenic flexure.

Tumeur=Tumour

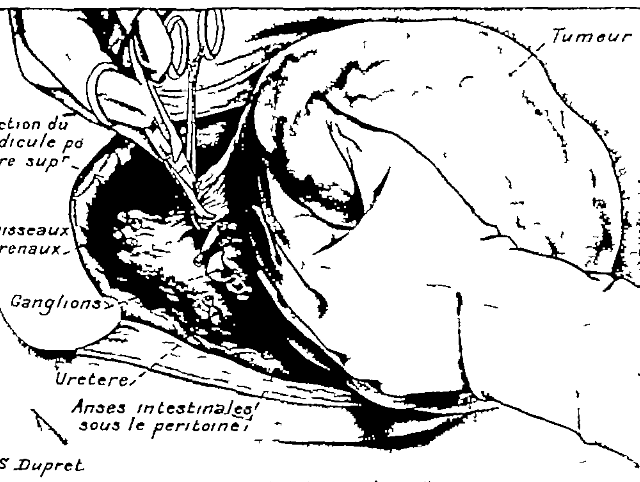


FIG 66 —TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

Section of a vascular pedicle corresponding to a superior polar artery

Section du pédicule polaire supr = Division of the upper polar pedicle. *Tumeur* = Tumour *Vaisseaux rénaux* = Renal vessels. *Ganglions* = Glands. *Uretère* = Ureter *Anses intestinales sous le péritoine* = Intestinal loops under the peritoneum.

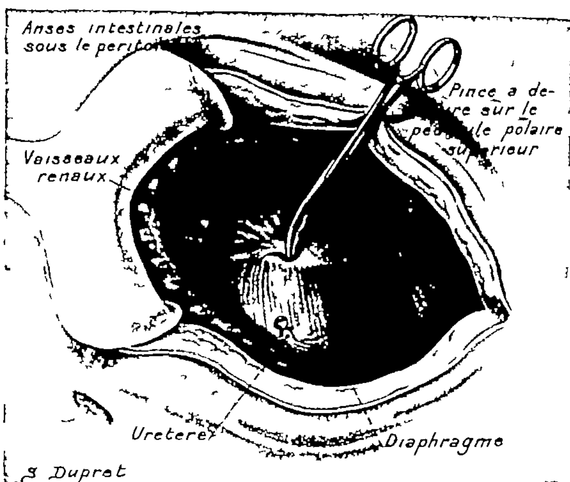


FIG 67.—TRANSPERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

Appearance of the renal cavity after the operation. It was impossible here to represent the enormous amount of hæmorrhage. The patient was already weakened by intestinal obstruction and hæmaturia; his precarious state did not allow of the operator closing all the vessels the forceps above (J. L. Faure's uterine forceps) remained in position for forty-eight hours. The operator has been compelled to leave a tampon in form of a sac the condition of the patient not permitting careful hæmostasis of the small vessels.

Anses intestinales sous le péritoine=Intestinal loops under the peritoneum. *Pince à demeure sur le pédicule polaire supérieur*=Forceps fixed to the superior polar pedicle. *Vaisseaux rénaux*=Renal vessels. *Uretère*=Ureter. *Diaphragme*=Diaphragm.

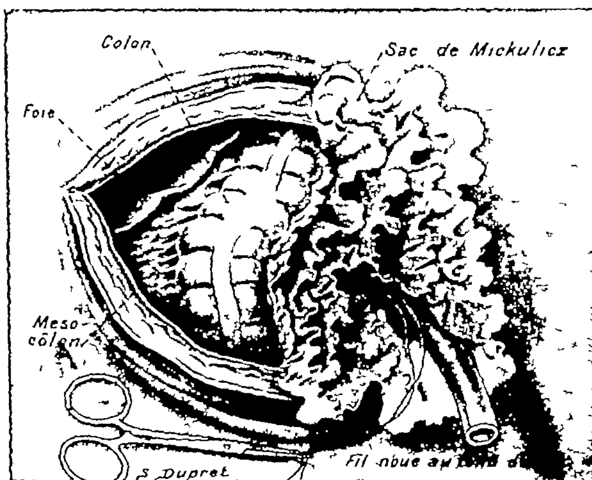


FIG 68.—TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

Tampon in form of a sac in the renal cavity The inner part of the incision will be closed at one level by bronze wire.

Côlon=Colon. *Sac de Mickulicz*=Mickulicz drain *Foie*=Liver *Méso-côlon*=Meso-colon. *Fil noué au fond du sac*=Thread tied at the bottom of the sac.

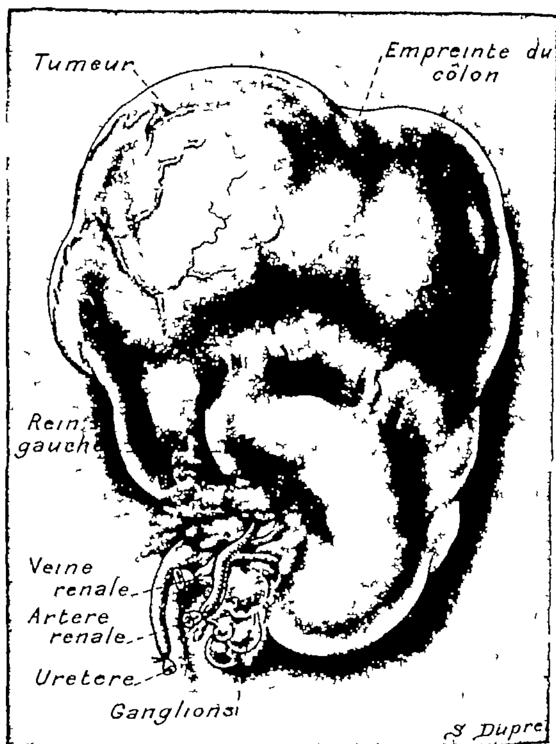


FIG 60.—TRANS-PERITONEAL NEPHRECTOMY FOR CANCER OF THE KIDNEY

Malignant tumour of the kidney anterior surface, drawn immediately after the operation by S. Dupret.

Tumeur = Tumour *Empreinte du côlon* = Impression of the colon. *Rein gauche* = Left kidney *Veine rénale* = Renal vein *Artère rénale* = Renal artery *Uretère* = Ureter *Ganglions* = Glands.

VI

HYPERTROPHY OF THE PROSTATE

Prostatectomy *

THE prostate is a group of glands which secretes a fluid destined to form the mass of the spermatic fluid, to hold the spermatozoa in suspension, and to maintain their vitality and mobility The glandular tissue is surrounded by muscular fibres which drive the spermatic fluid across the posterior urethra at the time of ejaculation, but play no part in the continence of the urine The true vesical sphincter is formed by the muscular tunic of the membranous urethra Ablation of the prostate does not in any way modify the control of the urine

Simple enucleation of the adenomatous mass neither suppresses nor increases sexual potency, but diminishes the chances of impregnation these are removed, if the vasa deferentia be cut or ruptured during decortication

Examination of the Prostate —Every person who consults a doctor for hypertrophy of the prostate should be subjected to a complete general and local examination.

The general examination includes examination of the circulatory, respiratory and nervous (tabes) systems. Examination of the blood will reveal the amount of urea and the presence of azotæmia Examination of the urine will show if sugar albumen, pus, or diacetic acid exist

The local examination includes digital examination of the rectum, which gives information regarding the size, mobility, and anatomical shape of the prostate and by it we recognise an adenoma a peri prostatitis, or a cancer Sometimes two of these lesions may co-exist, and this must be considered when deciding on the treatment to be undertaken. Afterwards catheterisation and cystoscopy should be performed.

* The illustrations refer only to perineal prostatectomy Those of the suprapubic form appear in fasc. III. The reader will find additional details in the "Chirurgie de la Prostate" (Victor Pauchet), Doin Editor and "Prostatectomie Suspubienne, Maloine, 1919

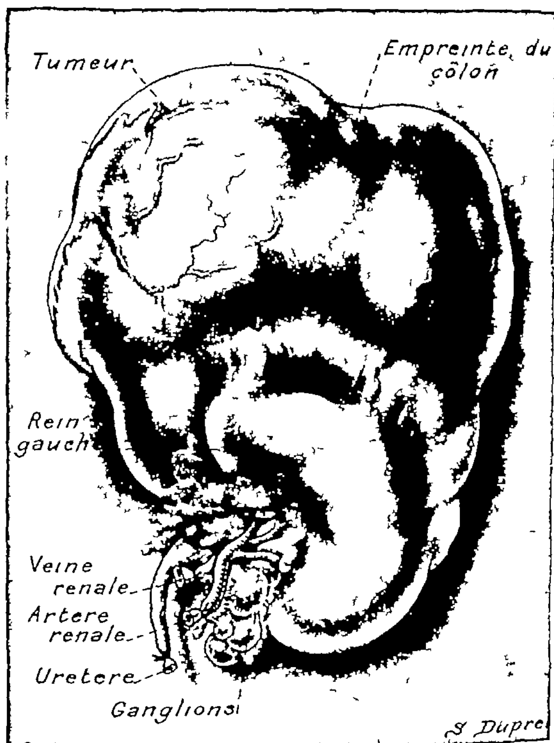


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Catheterisation gives us information regarding incomplete retention, and the quantity of residual urine.

Cystoscopy and urethroscopy show if a calculus exist or a prostatic bar if the hypertrophy be formed at the expense of the lateral lobes or if there exist a median prolongation, a bar forming what was formerly called "a middle lobe"

After this examination the surgeon can answer the questions which present themselves

Should operation be performed ?

Should treatment be instituted before operating ?

Should prostatectomy be suprapubic in one or two stages ?

Should perineal prostatectomy be carried out ?

Does the disease justify drilling ?

In eight cases out of ten, the chances are the case is one of adenoma, which is revealed by the finger as a large elastic mass, movable, granulated, irregular in form, with distinct outline, and a well marked median groove The symptoms experienced by the patient have existed for many years, and have progressed gradually

Cancer on digital examination, is generally of smaller size, one or two points, hard as wood and a mass with indistinct outline are recognised the mass is only slightly movable The median furrow has disappeared Bladder symptoms have rapidly progressed. Chevassu's sign of thickness is noted, a great distance between a sound in the urethra and a finger in the rectum Hæmorrhage from the urethra is common the patient is generally too young or too old for an ordinary adenoma. Consequently, beware of prostates in patients forty five to fifty or twenty four to twenty five years of age, who have suffered from, for a little time only, urinary symptoms

Chronic prostatitis shows itself as a diffuse, hard mass, a little like cancer but more regular and circumscribed, and less hard and larger Often, the median groove is still recognisable. If we be in doubt, we perform hypogastric cystotomy If it be a cancer, it will continue to grow if, on the contrary, it be a chronic prostatitis, it will get less, and the adenomatous nodules, which have been the origin of the peri prostatitis can be removed secondarily But in this case there should not be too long a delay between the hypogastric cystotomy and the removal of the adenoma, the line of separation between the adenoma and the inflammatory tissue is, moreover the more difficult to find the older the lesion by degrees, as the inflammation ceases the peri adenomatous tissue becomes

organised, and the line of separation is then difficult to discover If the finger cannot completely enucleate it, the complete operation should be postponed for eight days, when the peri adenomatous œdema will have produced a new line of separation, and enucleation will be able to be made

Is only a vesical calculus present, or is it combined with an adenoma? Often the surgeon takes a simple vesical calculus for an hypertrophy of the prostate Calculus produces tenesmus and signs of congestion of the bladder, cystoscopy settles the question.

When the diagnosis is made, if it be a calculus, perform lithotrity, if a removable circumscribed cancer, perform extra-capsular prostatectomy by the perineal or by the endo-vesical route If the cancer be inoperable, use curietherapy by plunging eight or ten needles of radium emanation, first by the hypogastric route then by the perineal, after a perineotomy If it be an ordinary adenoma, suprapubic or perineal prostatectomy, or drilling should be performed. If endoscopy show simple trabeculation—" tabetic "—think of a nervous lesion, and examine the eyes, the ocular and patellar reflexes, perform lumbar puncture, and make a Wassermann's test. If there be a prostatic obstacle, digital examination is negative the prostate seems normal, the urethroscope shows a rounded prominence in the middle of the gland in front of the neck of the bladder We consider this case the best one for drilling the lesion is not sufficiently large for a prostatectomy, and yet the obstacle preventing the patient from urinating must be made to disappear

Indications for Drilling the Prostate—This method consists in not only removing the adenoma but destroying in the tumour the part which forms an obstacle to the flow of the urine Luys operates without any anæsthesia, and by the natural route, with the urethroscope He combines galvano-cauterisation with electro-coagulation on the average once a week. Five or six applications suffice, generally the patient need not go to a hospital. This operation destroys the obstacle and allows the patient to urinate without leaving any residual urine in the bladder It is indicated in cases of small adenomata with prostatic prolongation, in cases of small hypertrophies and in debilitated subjects in whom prostatectomy appears too dangerous If afterwards the improvement in micturition be not maintained if anew, some months or years later, the subject suffer from dysuria it is easy to perform drilling again, since the operation is not painful, nor does it require the patient to go into hospital.

If the operation be limited by strict indications, it can be of great use but is not the treatment of choice

Indications for Prostatectomy—There are some prostates on which operation should be performed, others on which operation is not permissible, and others on which an intervention may be undertaken

I Cases in which one of the following symptoms exist require operation

Chronic retention requiring frequent or regular catheterisation, calculus, cystitis incontinence, hæmaturia, dysuria, in a word, all those in which true urinary symptoms exist.

II Operation should not be performed in cases which will not benefit from it, it may be because the condition is too serious, or the patients are at the same time too old and suffering from mild or recent symptoms of prostatic disease, or because the operation will not improve them physically, operation should not be undertaken on a dyspnœic patient, or one with dilated heart, or with œdema of the legs. Operation should not be performed on an octogenarian presenting the first symptoms of prostatic disease, age is certainly not a contra indication we have operated upon octogenarians with constant success

The class of inoperable cases, which formerly amounted to 50 per cent, is now reduced to the smallest proportions. Above all, it is reduced since we perform, in doubtful cases, the operation in two stages, with an interval of a hygienic mode of living of dieting and of massage between the two operations, and since we employ sometimes the perineal route

Amongst the patients from whom the surgeon cannot remove the prostate because of their debility, there are some where drilling is justifiable.

III The class of patients on whom operation can be performed varies with the experience and temperament of the surgeon, some operate only on those we class as patients, on whom operation must be performed—*i e*, as a result of serious symptoms and complications, others, more fond of surgical intervention operate on patients who consult them for the slightest symptom, corresponding to the characteristics of an adenoma Radical indication is always justifiable in their eyes because the adenoma is capable of producing progressive symptoms, because early operation is mild, and gives the patient the immediate benefit of normal micturition, because early operation protects the kidney prolongs notably physical and

social life, and, lastly, because it prevents all risk of the formation of cancer

Indications of Suprapubic Prostatectomy in Two Stages —Since 1906 we have often had recourse to this operation We operated formerly in two stages, once in ten, then ten in ten, and then four in ten cases At the first stage, the surgeon performed cystotomy, then at the second, prostatectomy, three weeks, two months, or six months later We avail ourselves of the preliminary cystostomy to submit the patient to detoxicating treatment during the interval

This operation in two stages is applicable to the following cases

(*a*) Patients with Distended Bladder, and with Residual Urine, in whom the bladder ascends to the umbilicus, and those with polyuria, with incontinence who have never been subjected *to catheterisation These last have wide ureters and infection in* them takes on a serious aspect after the first catheterisation.

By degrees the bladder can be made dry, by repeated catheterisation But it is often simpler to perform hypogastric cystotomy *at once, which in the hands of the majority of surgeons is less* serious and more easy

(*b*) In Infected Cases —Directly a patient has urinary symptoms, we at once perform cystostomy to diminish the chances of infection A patient, on whom prostatectomy has been performed runs the risk of being infected (*a*) by the empty and raw prostatic cavity, (*b*) by the cavity of Retzius. By operating in two stages, the chances of infection are doubled.

(*c*) Those with Insufficient Kidneys —Drainage of the kidney and of the bladder by vesical cystotomy improves the renal functions during this time the patient is submitted to a vegetarian diet and alkaline treatment, the amount of urea in the blood is lowered

Formerly, before operating we only considered the impression formed from the patient's appearance. When we saw a thin man, with good powers of resistance, evacuating 1,500 to 2,000 grammes a day of dark-coloured urine, we operated without hesitation. We must allow in these cases, the result was good Now the patient's appearance still plays a very important part and each time this impression is bad we operate in two stages

The principal methods of examining the kidneys are Ambard s constant of which F Legueu has shown the importance and

the patient, by an infarct, or by general anæsthesia, we think the deaths after prostatectomy are due to infection, intoxication from renal insufficiency, or to general anæsthesia

Intoxication is avoided by not employing general anæsthesia (we always use partial anæsthesia), and by previous detoxication of the patient Infection is avoided by a good technique and by the use of antiseptics.

The majority of "prostates" are men with lowered vitality, and poisoned, they must be handled with care

Pre-Operative Detoxicating Treatment

Numbers of patients with enlarged prostates have badly acting hearts and kidneys, their blood is charged with toxines and with urea, the arterial pressure increased, the arteries hard and tortuous, they suffer sometimes from dyspnœa on exertion from œdema of the ankles, from glycosuria, hernia, and from eczema, etc. Subjects with enlarged prostates are latent patients who ought to be prepared with great care. It is the detoxicating treatment that often makes them operable It should be imposed before operation in one stage or in the interval between the two stages of the operation in two stages It consists in

(a) *Drinking between Meals*, especially on waking, according as the kidneys and the arterial tension allow of it Vittel water, Evian water, decoctions of couch grass, or of dried fruits, prunes, figs, grapes, apples etc , natural or artificial alkaline water, or grape-juice.

(b) *A Fruit Cure.*—After the purgative cure of Guelpa, advise the patient a diet of fruits of which the duration varies with his resistance and his fatness, eight or fifteen days or three weeks, the exclusive use of fruits (oranges, grapes pears, bananas, apples, etc) can be tolerated

(c) *The Use of Cereals*, rice, potatoes, green vegetables without salt can be allowed

(d) *Restriction or Prohibition of Albuminoids*, meat, fish, eggs, or milk which give rise to azotæmia

(e) *General Massage* —Independently of a fruit and vegetarian diet recommend general massage to expedite metabolism, and the elimination of toxines, massage should be carried out for an hour, or an hour and a half every day

(f) *Respiratory Gymnastics* —To prevent pulmonary congestion, instruct the patient to breathe deeply by the nose before the opera

tion If this advice be given for the first time after the operation, the patient does not know what is expected of him, and has not the courage to carry it out. If, on the contrary, for four or five days before the operation, he be taught to breathe deeply and often by the nose he is accustomed to the gymnastics and instinctively carries it out during convalescence. This respiratory gymnastics oxygenates the blood, excites the tonus, facilitates the elimination of the waste matters, and decreases the chances of pulmonary and circulatory complications The use of Pescher's spiroscope is of great service

Immediate Complications of Suprapubic Prostatectomy (*R de Butler d'Ormond*) —SECONDARY HÆMORRHAGE.—These hæmorrhages can occur at three times

(*a*) When the drains are withdrawn They are, however, quite rare, if withdrawn on the fourth day, it is necessary then to tampon again.

(*b*) Towards the twelfth day they are quite rare, they can occur when injections are made through the penis, since we employed Marion's tube we have not seen them.

(*c*) From the fifth to the sixth day, they can be due to remains of the adenoma adherent to the capsule being left behind, after the second stage for adenoma complicated with peri prostatitis The patient must be anæsthetised, and the adenomatous remains removed, it is very easy, owing to the œdema around the adenoma, following the last operation. Directly the foreign body is removed, the hæmorrhage ceases

LOCAL SUPPURATIONS —These are negligible and very in frequent, they consist in a slight redness of the skin (slight lymphangitis) more serious is pericystitis (hiccough, fever meteorism, dry tongue oliguria suppuration in the cavity of Retzius) Perivesical pelvic cystitis is due to bad technique, in that the operator has separated the bladder too much with the finger a large quantity of pus then flows from the suprapubic wound, a drainage tube must be placed in front of the bladder Irrigate by Carrel s method Inject stock vaccine under the skin

BAD WORKING OF THE FIXED-IN CATHETER —All the urine passes by the suprapubic wound in spite of the catheter What is to be done ? Remove the catheter, it is of no use, if it be well in the bladder probably it depends upon the inability of the bladder to contract, try a Lebreton s catheter, or leave the catheter fixed

in the urethra, then introduce by the suprapubic wound an expand ing catheter, not by its end, but by its expanded extremity, so that the latter makes a kind of funnel which collects the urine, in the meanwhile, cicatrisation results and the urethral catheter acts.

SUPRAPUBIC FISTULÆ —If the suprapubic fistula exist beyond a month, it must be closed. Excise the superficial wound and the cicatricial tissue of the abdominal wall, expose the bladder, suture the bladder and the abdominal wall separately Now we systemati cally close the suprapubic wound from the thirteenth to the fifteenth day, if the urine be clear, if it be muddy, and if the operation be performed in two stages, excise the tract from the skin and the bladder, and do not suture

FEVER —1 Temperature is slightly raised (38°), there is no cause for anxiety

2 The slight fever may last for some days, there need be no anxiety, if the general state be good, without any digestive symptoms, it is generally due to the drainage and disappears when it is removed

3 Persistent fever with bad general state use Carrel's method of irrigation

4 The fever may depend on another complication, and be due to the lungs

URÆMIA —It is often characterised by hiccough after the operation, put the patient entirely on water chloroform is especially the cause of it it is rare with *local* anæsthesia *Institute Guelpa's* cure no chlorides and fruit

PHLEBITIS —There are several varieties

(*a*) Grave form, the patient appears to have entered into con valescence when suddenly the temperature rises to 37 8° or 38°, the patient feels pains in the legs (nothing on observation) then suddenly *he becomes dyspnœic and dies there is a phlebitis* of the peri prostatic plexus, generally unrecognised at the beginning *because there is nothing* to be seen in the legs beware also of tem peratures which occur towards the tenth or the eleventh day, do not let the patient move as a precaution Irrigate continuously, avoid wounding the cavity with the catheters

(*b*) Generally the phlebitis is the o[illegible] form—pains in one leg temperature, et[illegible] leg swell[illegible] phlebitis is less dangerous, for it is perc[illegible] [illegible]e patient [illegible]ept absolutely quiet and usually recove[illegible]

Pyelo-Nephritis —The temperature rises, the patient feels pains in one kidney, feed him on water, grape-juice, fruit and antiseptics He will have cloudy urine all his life

Infection of the Bladder and of the Prostatic Cavity — The patient complains of shivering, with fever, no pains in the kidneys, digestive symptoms are marked Ulcerated fragments pass in the urine, irrigate continuously by the drain in the bladder, if the cavity drain badly only by the vesical tube, drain by two catheters, a bladder and a urethral

Orchitis —This complication can supervene from the first to the third week, it is ushered in by fever and pains Should the fixed in catheter be removed from a patient suffering from orchitis? No, on the contrary, in these patients the prostatic cavity is infected and requires better drainage than the others

Orchitis does not occur if the vasa deferentia be divided, do this every time the urine is cloudy or the prostatic cavity has to be plugged The ligature is unnecessary in perineal prostatectomy

Late Complications of Suprapubic Prostatectomy (*R de Butler d'Ormond*) —They are rare and transitory

Nine times out of ten the patient, after prostatectomy, obtains a complete and immediate functional result, from the time the suprapubic wound is closed, he urinates completely and spontaneously, and can return to his work But the surgeon may notice for some weeks or months some transitory symptoms which require treating and of which it is necessary to warn the patient in order to give him no anxiety These are pollakiuria cloudy urine, pain on micturition, slight residue in the bladder, and partial incontinence.

These are due either to the operator having left a flap of mucosa which forms a valve above the cicatrised prostatic wound or to incomplete cicatrisation of the prostatic cavity, whilst the bladder is completely closed They also occur when the bladder is closed spontaneously, as when this has been done surgically washing out by nitrate of silver and daily emptying the bladder, remove them

In some old cases of distension, the atonic bladder slowly recovers its contractility and is emptied at first incompletely but at the end of some weeks or months, it regains its normal tonus

(a) *Pollakiuria,* which existed before the operation, may persist Before the operation it was due, either to protrusion of the adenoma at the neck of the bladder to a posterior urethritis, to a spermato-

in the urethra, then introduce by the suprapubic wound an expand ing catheter, not by its end, but by its expanded extremity, so that the latter makes a kind of funnel which collects the urine, in the meanwhile, cicatrisation results and the urethral catheter acts.

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(*b*) Generally the phlebitis is the ordinary form—pains in one leg temperature etc The leg swells. The phlebitis is less dangerous for it is perceptible, the patient is to be kept absolutely quiet and usually recovers.

PYELO-NEPHRITIS —The temperature rises, the patient feels pains in one kidney, feed him on water, grape-juice, fruit and antiseptics He will have cloudy urine all his life

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These are due either to the operator having left a flap of mucosa which forms a valve above the cicatrised prostatic wound, or to incomplete cicatrisation of the prostatic cavity whilst the bladder is completely closed They also occur when the bladder is closed spontaneously as when this has been done surgically, washing out by nitrate of silver, and daily emptying the bladder, remove them.

In some old cases of distension, the atonic bladder slowly recovers its contractility and is emptied at first incompletely but at the end of some weeks or months it regains its normal tonus.

(*a*) *Pollakiuria* which existed before the operation, may persist. Before the operation it was due either to protrusion of the adenoma at the neck of the bladder to a posterior urethritis, to a spermato-

cystitis (Luys), or to a concomitant cystitis It ceases generally directly the prostate is removed, but it may persist as long as the cavity, left after enucleation, is still covered by embryonic tissue, and so long as the urethral and vesical mucosa are not yet re-united, in this case catheterisation is necessary after micturition, if the urine be thick, and there be some residue, it is a good thing to irrigate every day with protargol, by degrees, the residue disappears and the urine becomes clear

(b) *Pain on Micturition* —This is rare, when it exists, it is due either to a slight cystitis, or to the operation having been incorrectly or incompletely performed Remains of the mucosa or a fragment of an adenoma are left behind

Removal of an adenoma is generally easy, but certain conditions may complicate it, we have mentioned above, under the influence of inflammatory exacerbations, or as the result of concomitant peri prostatitis, there are some cases where the operator has difficulty in finding the line of separation, the enucleating index finger misleads him, the operation is laborious, leaving after it an irregular cavity with some fragments of prostatic cells, some nooks and corners due to false digital passages The patient then becomes febrile, with secondary hæmorrhages, cloudy urine and painful micturition, he recovers slowly, and is not completely satisfied with the operation Without hesitation the patient should be operated upon eight to fifteen days after the incomplete adenomectomy, complete enucleation is then easy, because a new line of section has been made

(c) *Incontinence of Urine* —Patients who have suffered for some time from a distended bladder and on whom prostatectomy has been performed, may for some weeks have slight atony of the bladder, with a small residue of urine Control over the bladder is normal in nearly all the cases operated upon by the suprapubic method

We have seen cases of cancer of the prostate requiring removal of the whole cavity and even a part of the urethral sphincter, and yet control over the urine has been perfect. But we have observed, even with Freyer's operation, three cases of partial incontinence, the patients passing a few drops of urine lying down or standing up, one of these patients is a doctor who still passes some drops of urine during the night, although he was operated upon ten years since. In similar cases it is necessary to re-educate the perineal muscles inject into the bladder 200 grammes of boric acid in water and tell the patient to micturate when 200 grammes have been

passed he suddenly stops urinating, then begins again, until the bladder is completely emptied He thus trains himself to micturate and stop the flow at will. He employs this exercise morning and evening

We have never noted absolute incontinence of urine—*i e*, complete loss of urine without consciousness of micturition Such a condition would be worse than dependence on regular catheterisation, to which the patient with an enlarged prostate was formerly subject.

This incontinence is more frequent after perineal prostatectomy if the urethral sphincter be wounded

(*d*) *Vesical Residue*—Some patients suffer from pollakiuria or thick urine, if a catheter be passed, after micturition 30 to 60 grammes are found remaining Generally, this retention depends on the fact that the prostatic cavity is not yet cicatrised, or atony of the bladder has not yet disappeared The patient should pass a catheter regularly once a day, and wash out with protargol, and after some weeks or months, the normal tonicity returns But the residue may persist in patients with nervous disease there are, moreover some false " prostates " because of early ataxia, and there are also some patients who are both tabetic and prostatic, and this is one of the points to find out in the indications for prostatectomy

Allowing for the extreme frequency of tabes fruste, and also for the great number of prostatic adenomata, the surgeon may ask himself if the symptoms be due to the one or the other He must examine the nervous system carefully if he find premonitory ocular symptoms if Wassermann and lumbar puncture be positive, he ought not yet to be sure the medullary lesion is responsible for the urinary symptoms The patient may be suffering from a mild form of tabes with a very good bladder behind a prostatic adenoma But every time the prostate is small on examination the question should be asked if the bladder symptoms come from the spinal cord, but a prostate small to the finger does not mean there is no adenoma The retention may be due to protrusion of the middle prostatic lobe, which is not perceptible by the rectum, recourse must be made to the urethroscope or to the cystoscope, and if this intra vesical prominence be noted, the conclusion ought to be drawn there is a mechanical obstacle and operation should be performed We operated ten years since on a Brazilian with marked spinal symptoms, and suffering from retention Digital examination brought to light a voluminous prostatic adenoma, catheterisation

was difficult. We operated and told the patient "Perhaps you will have no other result except that catheterisation will be easy," for this patient for one year had 100 to 150 grammes of urine remaining in the bladder, but by degrees the bladder recovered its tone, and he urinates to-day normally, it would have been regrettable if we had not operated

Some surgeons have proposed to study first the contractility of the bladder with an apparatus, we have not tried it. As a result of numerous injections into the prostatic cavity, secondary strictures come from the formation of a "sub-vesical recess" at the expense of the cavity left after enucleation, covered by a diaphragm of the mucosa This complication, of anatomical causation, does not occur, if the index finger attack the mucosa far behind the prominence in the bladder

After-Care of Cases of Suprapubic Prostatectomy —The after care of the patient plays a very important part, it is difficult The surgeon who possesses a good male or female nurse, well trained and skilled in attending to these patients, ought to employ him systematically in all cases of prostatectomy and keep him for these patients

Keep the patient under constant watch for forty-eight hours, keep an eye on the quantity of the hæmorrhagic oozing, take the arterial tension, place the patient first on one side and then on the other, sit him up at the end of forty-eight hours, constantly cheer him up, make him breathe by the nose. Rub the skin of the whole body twice daily See that the buttocks do not ulcerate, and that thrush does not form in the throat

DRESSING —This should be of cellulin which is more absorbent than hydrophile cotton wool, collargol ointment on the wound, the dressing should remain for four days, without being touched

Convalescence of Suprapubic Prostatectomy (*R de Butler d'Ormond*) —The patient, on leaving the operation theatre, has drains and a tube, what is required ?

Convalescence consists of two periods

First Period (*Hæmostasis*) —Three to four days, both the tube and drains remain in place, some straining and tenesmus are felt, belladonna suppositories allay them, the urine remains red, but soon becomes brown in colour, and then clearer certain patients, however, pass red urine for more than twenty four or forty-eight hours, this indicates a tendency to hæmorrhage inject ergotin into the muscles try continuous warm irrigation with a solution of

antipyrin (4 per cent), remove the clots Do not touch the dressing before the third or fourth day, except, however, if the urine pass between the drain and the wound, in this case renew the absorbent dressing as is necessary, on the fourth day—i e, after three full days—hæmostasis can be considered as completed, withdraw the drains, do not be tempted to remove them earlier, a hæmorrhage may be produced if they be taken out on the first or second day, when there are many drains they should be withdrawn in the order they have been inserted, to mark them out, attach a thread to each drain, and make on each thread one or more knots according to the order of their introduction, the knotted threads should hang outside, the thread of the first drain should have one knot, the second two, the third three, and so on (Marion)

Second Period (Restoration and Closure of the Wound)—Contraction of the wound As soon as the drains are removed and the tube withdrawn, the suprapubic wound begins to cicatrise, Marion's large tube is replaced by a Pezzer's tube, which should pass well into the bladder, make sure of this by means of an injection through the small collateral tube Pezzer's tube should be changed about every three days, depending on the appearance and vitality of the tissues. The superficial dressing should be changed as often as the patient becomes wet The skin ought to remain always dry and clean, rubbing with alcohol generally ensures this, towards the twelfth day, generally, granulations form and the tube can be removed

Closure of the Suprapubic Fistula—A catheter is fixed in on the tenth day, it is sometimes difficult to pass the catheter into the bladder and this depends upon the fact that between the posterior cavity which is cicatrising and the bladder cavity a kind of spur is formed by the mucosa which lines the protruding lobe, it is sufficient to use a mandrin to direct the beak of the catheter well forward When dressing, take care the superficial wound does not close too early above all, it ought not to close before the bladder otherwise there will remain between the cavity of the bladder and the cutaneous wound a small cavity, which will become filled with urine and retard still more closure of the bladder, the fixed *in* catheter ought to remain for three days after the suprapubic wound has healed, it is known to be closed when on injecting fluid into the bladder, nothing discharges from the abdominal wound, generally it is necessary for the catheter to remain in position for from eight to ten days.

At the end of three weeks, the patient micturates perfectly, but the bladder must be looked after, the urine may still be cloudy, because the bladder has not yet cicatrised, the internal layer not having yet completely healed At about the end of a month, the urine becomes to get clearer, it is a good thing, in the interval, still to wash out the bladder Lastly, the patient may complain of pain at the end of micturition, and it is wise to inject nitrate of silver, which cleans the bladder and promotes cicatrisation

If the suprapubic wound do not close rapidly, it is advantageous to refresh (local anæsthesia) its edges and to close it A catheter should be fixed in Closure takes place in eight days

Some Advantages of Perineal Prostatectomy —It can be carried out in one stage, the operation field being much more circumscribed, it is milder and is applicable to patients slightly infected, or suffering from renal insufficiency

Disadvantages of Perineal Prostatectomy —They are the following

The operation is more difficult, and there is a chance of injuring the rectum, of forgetting a calculus of stricture or of permanent fistula, *there is a danger of injuring the vasa deferentia,* with resultant impotence, and of incontinence, if the urethral sphincter be torn

Rectal fistula, is avoided when one gets accustomed to the operation.

There is no difficulty for a skilled operator

Calculus is not forgotten, if the diagnosis be made by the cystoscope

The ejaculatory ducts can be avoided, if perineal enucleation be made like suprapubic enucleation—*i e* keeping behind the verumontanum whilst attacking the prostate posteriorly, and removing it *en bloc*, as by the suprapubic method

The urinary fistula, when it exists is cured secondarily

Closure of the Perineal Wound —The operator leaves in the bladder by the perineal wound a Pezzer s tube, No 24, and fixes it on a tampon This tampon is made of gauze or rubber stops the bleeding and acts as a drain The nurse injects boric acid water morning and evening by the tube the expanded extremity of which is afterwards placed in a urinal At the end of eight days, replace or remove the tampon which ought not to remain longer than the ninth day

On the ninth day, the perineal tube is replaced by a urethro vesical catheter Cicatrisation requires fifteen to twenty days

General Treatment Common to all Prostatectomies —During the first days, the general health should be supported by camphorated oil, sparteine, and by serum If the patient cannot sleep, it is a good thing to give opium, the day after the operation he should take some grape-juice, oranges, syrup of fruits, or milk mixed with Vichy water, at the end of forty-eight hours, a purgative is necessary, then a slight amount of food milk, soup, etc Avoid constipation.

When can the patient get up ? Leave him in bed until there is complete cicatrisation of the wound—i e , say three weeks

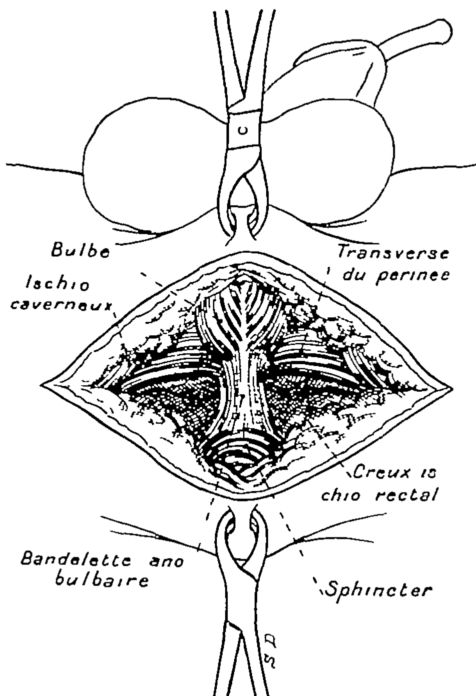


FIG 71.—PERINEAL PROSTATECTOMY

Appearance of the region directly the knife has divided the skin and made visible the three superficial muscles of the perineum, as also the ano-bulbar band.

Bulbe = Bulb. *Ischio-caverneux* = Ischio-cavernous muscle. *Transverse du périnée* = Transverse muscle of the perineum. *Creux ischio-rectal* = Ischio-rectal fossa. *Bandelette ano-bulbaire* = Ano-bulbar band. *Sphincter* = Sphincter

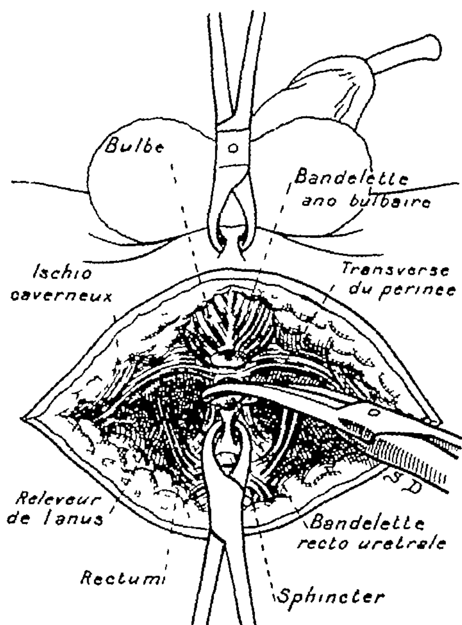


FIG 72.—PERINEAL PROSTATECTOMY

Division of the ano-bulbar raphé of the recto-urethralis muscle (The purpose of these three figures is to facilitate understanding of the cinematograph drawings which follow)

Bulbe = Bulb. *Bandelette ano-bulbaire* = Ano-bulbar band. *Ischio-caverneux* = Ischio-cavernous. *Transverse du périnée* = Transverse muscle of the perineum *Releveur de l'anus* = Levator ani. *Bandelette recto-urétrale* = Recto-urethralis muscle *Rectum* = Rectum. *Sphincter* = Sphincter

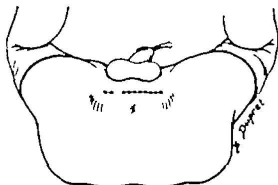


FIG. 73.—PERINEAL PROSTATECTOMY

The perinæum is not vertical, but raised as much as possible (inverted position of Proust). The operator marks out the ischia and makes a transverse incision from one ischium to the other between the anus and the rectum.

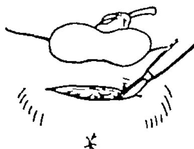


FIG 74.—PERINEAL PROSTATECTOMY

The knife divides the skin and exposes, in the middle line the ano-bulbar raphé, on each side of which the fibres of the transverse muscle are seen, behind, the sphincter ani, and in front the bulbo-cavernous muscle

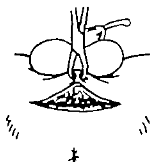


FIG. 75.—PERINEAL PROSTATECTOMY

In order to stretch the ano-bulbar raphé, the operator applies tissue forceps on the anterior lip of the wound.

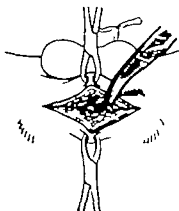


FIG 76.—PERINEAL PROSTATECTOMY

The two tissue forceps pulling in opposite directions expose the ano-bulbar raphé, Closed scissors scrape the bottom of the wound on each side of the median line so as to make the ano-bulbar raphé more prominent.

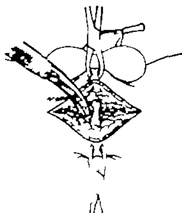


FIG 77.—PERINEAL PROSTATECTOMY

Curved scissors scrape the bottom of the wound on each side of the middle line and lay bare the ano-bulbar raphé, stretched by the tissue forceps.

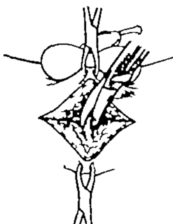


FIG 78.—PERINEAL PROSTATECTOMY

Scissors cut the ano-bulbar raphé immediately behind the transverse muscle and in front of the sphincter

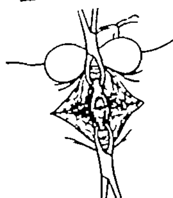


Fig 79

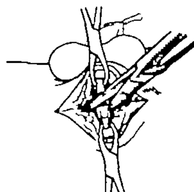


Fig 80

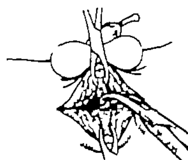


Fig 81

Fig 79.—Perineal Prostatectomy

Division of the ano-bulbar raphé.

Fig 80.—Perineal Prostatectomy

Division of the recto-urethralis muscle stretched between the rectum and the urethra directly this muscle is divided, the recto-prostatic detachable space of Proust exposed.

Fig 81.—Perineal Prostatectomy

Division of the recto-urethralis muscle.

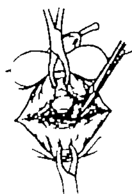


Fig 82

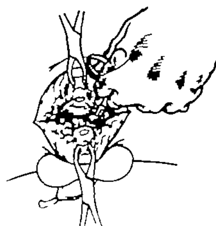


Fig 83

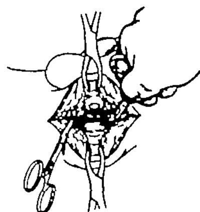


Fig 84

Fig 82.—Perineal Prostatectomy

The operator has removed the tissue forceps which held the skin and has applied them to the extremities of the ano-bulbar raphé so as to stretch the deep part of the wound. The division of the recto-urethralis muscle has separated the rectal ampulla from the urethra. Forceps, held in a tampon, searches for the detachable space of Proust.

Fig 83.—Perineal Prostatectomy

The forceps continues to separate from right to left of the wound, patiently and gently so as not to tear the rectum. A finger from time to time is passed forward at the side of the urethra which the reader guesses to be the prominence A catheter has been placed in the canal to make it perceptible

Fig 84.—Perineal Prostatectomy

The detached space is open. The compress works deep down it continues to separate the membranous urethra and the prostate from the rectum. A branch of the internal pudendal artery has been seized.



FIG 85.—PERINEAL PROSTATECTOMY

The prostate exposed, the finger begins to separate the prostate from the rectum first in the middle line.

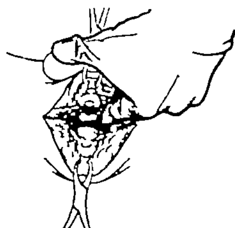


FIG 86.—PERINEAL PROSTATECTOMY

The finger separates one lobe of the prostate surrounded by its sheath.

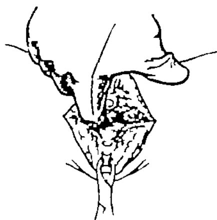


FIG 87 —PERINEAL PROSTATECTOMY

Separation of the prostate from the rectum continues.

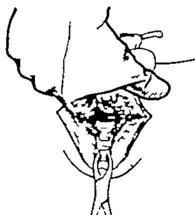


FIG 88.—PERINEAL PROSTATECTOMY

The index finger of the operator separates the other prostatic lobe



FIG 89.—PERINEAL PROSTATECTOMY

The finger discovers the extent of the separation of the prostate from the rectum to make the prostate quite visible a retractor is placed on the rectum and the posterior surface of the prostate is rendered visible

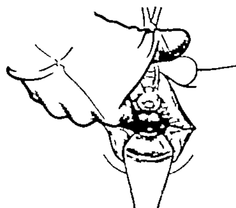


FIG 90 —PERINEAL PROSTATECTOMY

The posterior surface of the prostate being sufficiently exposed, the index finger works deep down and at the right side of the patient to liberate it better

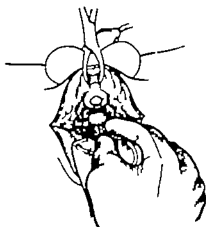


FIG. 91.—PERINEAL PROSTATECTOMY
The prostate is visible, the retractor is in position; the operator taking the knife punctures the capsule of the prostate exactly in the middle line, and as far as possible behind, if feasible, at the junction of the posterior third of the organ with the anterior two thirds. The incision is median and posterior so as not to injure the ejaculatory ducts.

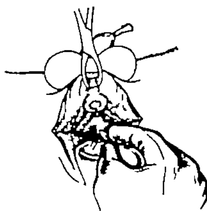


FIG 92.—PERINEAL PROSTATECTOMY
The knife punctures the prostate its point aiming at the urethral catheter This in cision opens two passages: deep down the bladder cavity to introduce Young's retractor and, more superficial, the peri adenomatous space where enucleation with the finger is to take place

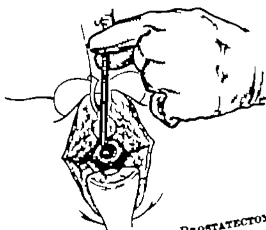


FIG 93.—PERINEAL PROSTATECTOMY
How Young's retractor is introduced. The instrument is first placed vertically its point directed downwards.

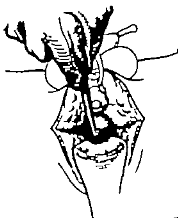


FIG 94.—PERINEAL PROSTATECTOMY
The manipulation with the retractor continues. The operator feels his way to be able to introduce it into the bladder

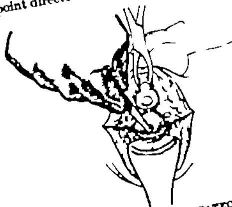


FIG 95.—PERINEAL PROSTATECTOMY
Manipulation with the retractor which is gradually lowered.

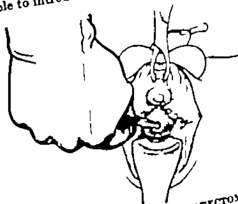


FIG 96.—PERINEAL PROSTATECTOMY
The retractor has penetrated into the bladder

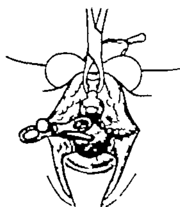


FIG 97 —PERINEAL PROSTATECTOMY
The retractor is opened and its separated jaws rest on the intra vesical portion of the bladder

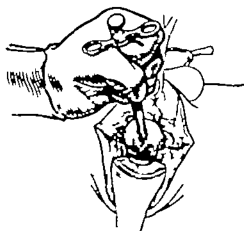


FIG 98 —PERINEAL PROSTATECTOMY
The left hand fixes the prostatic mass with the retractor

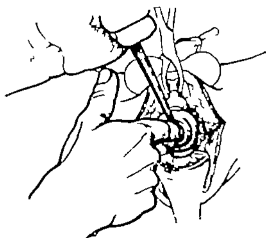


FIG 99.—PERINEAL PROSTATECTOMY
The index finger of the right hand is introduced between the adenoma and the prostatic capsule. Enucleation begins at the right side of the operator

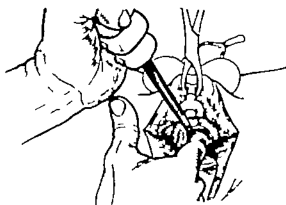


FIG. 100 —PERINEAL PROSTATECTOMY
Enucleation of the right lobe continues.

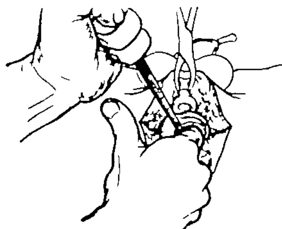


FIG 101 —PERINEAL PROSTATECTOMY
Enucleation of the left part of the prostate

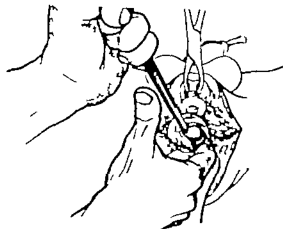


FIG 102.—PERINEAL PROSTATECTOMY
The left lobe of the adenoma begins to be enucleated.

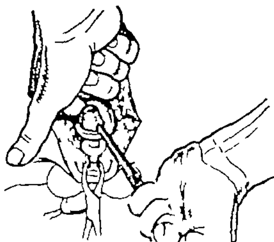


Fig 103 —Perineal Prostatectomy
Result of the enucleation. The whole left portion of the adenoma is now free.

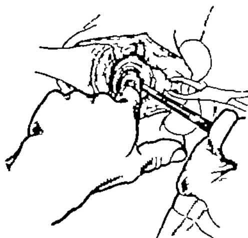


Fig 104.—Perineal Prostatectomy
The operator returns to the right lobe.

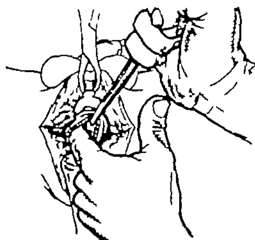


Fig 105.—Perineal Prostatectomy
The enucleation continues on the opposite side Note the different positions of the hand.

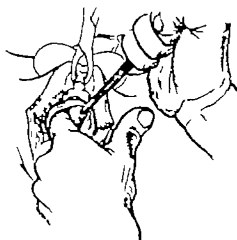
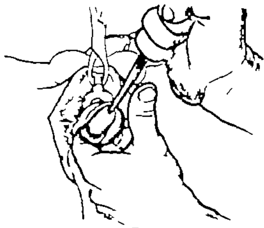


Fig 106 —Perineal Prostatectomy
The enucleating finger works deeply



10 —Perineal Prostatectomy
.denomatous mass held by the re- :tor is separated more and more from peri-adenomatous capsule

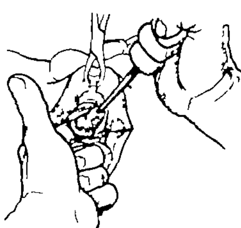


Fig 108 —Perineal Prostatectomy
The enucleation of the adenomatous mass continues

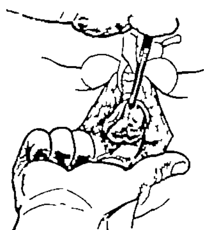


Fig 109 —Perineal Prostatectomy
he left lobe still held by its vesical surface a stroke of the finger on this side succeeds in freeing it.

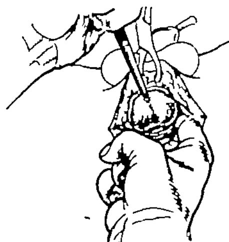


Fig. 110 —Perineal Prostatectomy
The last stroke of the finger to mobilise the adenoma.

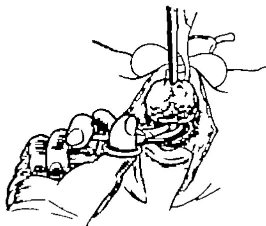


Fig. 111 —Perineal Prostatectomy
Enucleation is finished. The adenoma is held only by the prostatic urethra, which is divided by one cut of the scissors. Note the depth of the adenoma behind the point by which the retractor penetrates into the prostatic urethra. The reader will remember that the puncture of the canal was made, not on the anterior extremity of the prostatic urethra, but at the junction of the anterior two thirds and its posterior third.

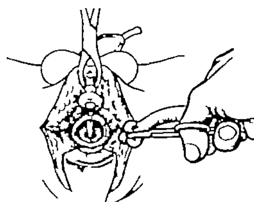


Fig. 112.—Perineal Prostatectomy
The urethral catheter shows the direction of urethra and of the prostatic portion whic wanting The operator introduces a Pez tube into the bladder The urethral catheter be removed. Any discharge comes more fron vesical opening, which the operator sees at bottom of the wound, than from the pros cavity The introduction of a large Pezzer's facilitates hæmostasis. If this does not suffi stitch in the mucosa is sufficient to stop the hæ rhage.

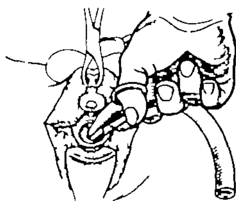


Fig 113 —Perineal Prostatectomy
Introduction of Pezzer's tube into the bladder

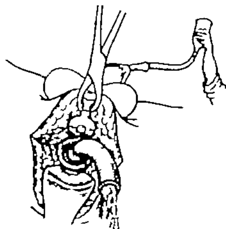


Fig. 114.—Perineal Prostatectomy
Washing out the bladder- water passes by the ur and escapes by Pezzer's tube. Some clot ejected.

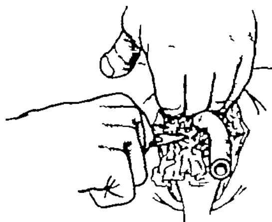


FIG. 115.—PERINEAL PROSTATECTOMY

Tampon of gauze or a layer of rubber to make hæmostasis. A drain each side of the tube

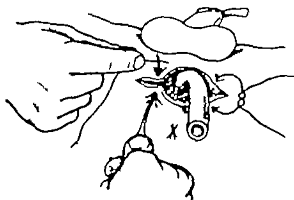


FIG 116.—PERINEAL PROSTATECTOMY

The commissures of the cutaneous wound are closed by silk worm gut

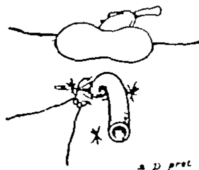


FIG 117.—PERINEAL PROSTATECTOMY

A third silk worm gut suture fixes the tube into the perineum; the two drains are enclosed to avoid infection from the wound. They should be changed at the end of two or three days

VII

CANCER OF THE STOMACH

Operative Indications, Care of the Patient Before and After *Operation*

CANCER of the stomach represents half the cancers of the digestive tract, and a third of cancers generally

Three-quarters of cancers of the stomach arise from old ulcers

The existence of the majority of gastric ulcers is unknown The examination most often amounts to asking questions and physical exploration. Frequently there is no vomiting or hæmorrhage, physical examination (palpation and percussion) reveals neither swelling pain nor muscular tension. The clinician does not venture, on so few facts to make a diagnosis of gastric ulcer, and pronounces the words "hyperacid dyspepsia."

The doctor ought to know that

1 Ulcer should be suspected if dyspepsia exist for a long time and is obstinate, or if it be accompanied by pains showing a certain fixity in time and localisation above all if it be separated by periods of complete quiescence, which give rise to the false belief in a cure.

2 A chemical examination of the gastric juice should be made, and a radioscopic examination in every patient suspected of ulcer

3 It is nearly impossible to distinguish recent ulcer, curable medically from chronic incurable ulcer

4 Syphilis should be thought of and all examinations connected with this diagnosis, should be made (Leredde)

To sum up the classic form with pain vomiting and hæmorrhage is rarer than the latent form.

Every chronic ulcer requires operation We will even say, every acute ulcer in people forty years of age or more should be immediately operated upon without losing time by medical treatment (Maurice Delort) *

* Cancer d Estomac, Victor Pauchet and Maurice Delort *Presse Médicale* November 6 1920

INDICATIONS —The question of intervention in every recognised or suspected cancer immediately obtrudes itself. It is necessary to know if operation be still possible, and what operation must be performed—gastrectomy, gastro-enterostomy, or jejunostomy

Jejunostomies for cancer have given us very short survivals. Jejunostomy is, then, only applicable, if during an exploratory laparotomy, gastro-enterostomy and gastrectomy are impossible.

Gastro-enterostomy is only indicated as a first stage of a gastrectomy for a tight stenosis, still more in cases where gastrectomy is impossible, *owing to too extensive adhesions or as a result of* generalisation, with the presence of gastric stasis. Where there are no local risks of stasis, and when exploratory laparotomy reveals signs of generalisation, the abdomen should be closed without doing anything

Gastrectomy is the only curative operation. Its gravity varies with the operators and the patients. If the surgeon operate only on movable or slightly adherent tumours, he may obtain a statistical operative mortality of about 5 per cent If, on the contrary, he attack cases requiring removal of numerous glands, resection of the pancreas, of the gall bladder and of the colon, the percentage of deaths reaches 30 to 40 per cent On the other hand, as these last patients will only live some months with a simple gastro-enterostomy, it is better to risk the difficult and dangerous operation to give the patient a longer life

Clinical Examination —When the diagnosis has been made, and when it is a question of operation, what signs ought to determine, limit, and direct the operation ?

1 PALPATION —This may reveal

(*a*) A tumour whose size and mobility is estimated If it be slightly mobile, and disappear under the left ribs, this contradicts even gastro-enterostomy

(*b*) *Extensive or general contraction of the muscles.* This should make us suspicious of generalisation But, a chronic ulcer with extensive perigastritis or threatening perforation can produce the same symptom.

(*c*) *A large and hob-nailed liver which contra indicates every* operation

2 LOOK FOR METASTASES —

(*a*) Look for Troisier's gland (a contra indication to operation)

(*b*) By vaginal or rectal examination, feel for metastases in Douglas' pouch, in the rectum, or in the ovaries (contra indication)

3 INSUFFLATION OF THE STOMACH (Gaston Lion) allows us to recognise the amount of gastric tissue of which the best use can be made, and of its flexibility It should be performed methodically, exposing the whole of the wall in successive stages, the sonorous area after moderate and after marked insufflation

SPECIAL EXAMINATIONS—1 *Radioscopic Examination* —Determine the stasis, the approximate limits of the lacuna, the spontaneous and provoked mobility of the stomach, and the extent of the gastric tissues the surgeon will have at his disposal

2 *Chemical Examination of the Gastric Juice.*—Important as this is for the diagnosis, it gives only little information regarding the operation When hypo-acidity is slight, and when there exists free HCl, there is hope a large part of the wall is still healthy

EXAMINATION OF THE PATIENT'S GENERAL CONDITION —All the organs ought to be passed under review, particularly the circulatory and nervous systems, the condition of which so greatly influences the prognosis of the operation The morale of the patient, his athletic habits previously, his healthy or unhealthy life, his energy, are to be balanced with the seriousness of the operation

Care before the Operation —1 *Examine the urine* test for sugar, albumin, Ambard's constant, acidosis

2 *Examine the blood* number of blood corpuscles, Bordet-Wassermann's reaction

3 See the teeth are clean, get the dentist to remove the tartar, paint the gums with iodine, morning and evening, rinse out the mouth with oxygenated water to prevent parotitis (very serious), thrush infection of the gastric sutures, and pulmonary complications.

4. Disinfect the nose with antiseptic oil, morning and evening

5 Teach the patient to breathe deeply by the nose, so he knows how to do so on the days following the operation, in order to avoid passive congestion of the lungs and to keep his mouth moist (the spiroscope of Pescher is of great use)

6 Keep the patient in a sitting position and get him accustomed to it.

7 Five days at least before the operation, empty the intestine with a large purgative if there be no stenosis of the pylorus, other

wise, give many purgative enemata of senna, of sulphate of soda, or of oil.

8 Wash out the stomach forty-eight hours before the operation in order to disinfect it, and especially to get the patient accustomed to lavage in all cases where it would be necessary during the days after the operation,

9 Watch the throat before and after operation to discover the least traces of thrush, which should be treated by glycerine and borax.

10 Watch the sacrum and the trochanters to prevent bedsores, make the patient change his position, rub the skin with alcohol.

11 Powder the genital and anal regions to prevent cutaneous infection

12 Feed the patient as long and as much as possible, and see he takes plenty of liquid, for this purpose, he should take three pints a day, with the food, or by serum. This latter should contain chlorides, if the kidneys be healthy, with glucose, or iso-hypertonic. It may be given subcutaneously, quite well intravenously (we prefer it more often), and satisfactorily by the rectum, by injections drop by drop To the serum, if desirable, 1 to 4 c cm. of adrenalin solution to the thousand, should be added

ANÆSTHESIA —The use of ether runs the risk of causing pulmonary complications Chloroform diminishes the resistance of the subject by its toxic action on the liver, the kidney, and on the internal secretory organs

We use one of the two following methods

1 *Regional Anæsthesia* *—This includes infiltration of the abdominal wall or novocaine (1 per cent) and infiltration of the splanchnic nerves by the lumbar region

2 *Spinal Anæsthesia* —Use either the present method—*i e*, injection of novocaine (10 centigrammes) between the 12th D and the 1st L., or the method of Le Filliâtre—*i e* injection of cocaine (5 centigrammes) at the lumbo-sacral hollow

These different methods which avoid narcosis are all good and expose the patient very little to pulmonary complications. The custom of the operator and the indication furnished by each case will decide the choice of one or the other

OPERATIVE TECHNIQUE OF PARTIAL GASTRECTOMY —(This will appear in Fasc III)

For complete gastrectomy see the following chapter, p 139

* Anesthésie Régionale Pauchet Sourdat and Labat (Doin, Paris, 1920)

After-Care —If the kidneys be healthy, do not refuse morphia, if the patients be in pain Place the patient in a half sitting position in a quiet room

If the results of the operation be without complications, after the first few hours, give sugared water by the mouth and plenty of serum by one of the methods already mentioned

Feed the patient as soon as possible and in succession with milk, increasing the quantity progressively by ¼ pint up to 2 pints, soups, pap, add fruit-juice, which is an agreeable beverage, and which is nutrient, especially from the sugar it contains. After the eighth or ninth day, eggs and meat are permissible in small quantities, the patient gladly takes them, thinking this increase of food is the sign of complete cure

Cleanse the teeth, disinfect the nose, respiratory exercises as before the operation.

If there be complications

(a) Vomiting intolerance of food wash out the stomach with warm serum, morphine, atropine ice.

(b) Peritoneal reaction (distension, hiccough, intestinal paresis), ice to the stomach which ought to be employed on the slightest suspicion, do not fix in a rectal tube at the most, introduce one and withdraw it immediately to remove the existing flatus

(c) Spasm producing intolerance of food, the gastro-enterostomy opening does not functionate and the food and flatus is stopped at some spot atropine 1 5 mgr, in twenty four hours ice to the abdomen.

Operative Complications

(a) *Hæmorrhage* —If some hours before intervention the patient vomit red or digested blood wash out the stomach with warm saline water and wait. If the hæmorrhage recur, having washed the stomach out again, but this time with pure water until all the acid is exhausted a quick lavage can be given with a solution of nitrate of silver 1 per 4 000, which must not be left in the stomach

(b) *Vicious Circle* —The patient vomits notwithstanding the lavage the fluid does not pass into the intestine The vicious circle is due to the fact that the gastro-intestinal anastomosis functionates badly it functionates badly because the loop has been twisted or badly applied

(c) *Separation of the Abdominal Wall* —It may open spontaneously eight to fifteen days after the operation To avoid this

accident, it is a good thing to suture the abdominal aponeurosis with four or five strong and abandoned silk worm gut stitches (Walther), or use bronze wire, which should be left in for at least twelve days

(d) *Broncho-Pulmonary Infections*—They can be due to the irritant action of ether, but more often to infection from the nose, from the teeth, from the mouth, from poor respiration, or to the difficulty in expectorating, owing to abdominal pain. They are rare with regional anæsthesia.

(e) *Thrush*—Examine the back of the throat every day, if thrush exist, paint with glycerine and alkalies.

(f) *Parotitis*—This is due to dryness of the mouth, to its infection, and to dehydration of the body (Claisse) If it be bilateral, it depresses, infects and intoxicates the patient, and can lead to death Beware of a mouth without saliva

(g) *Acidosis*—Sometimes after a simple and easy operation, carried out with unimpeachable technique, the surgeon is sadly surprised to lose the case in two or three days, with the following symptoms oliguria, restlessness, insomnia, inability to pass flatus, acetonæmic odour of the breath, rapid pulse, collapse Shock, peritoneal infection or hæmorrhage, is blamed for it, in reality, it is due to acidosis, examination of the blood and of the urine prove it. Examine, *before and after the operation*, the urine for diacetic acid, which gives a port-wine colour with perchloride of iron The acidosis is the result of denutrition of glandular insufficiency, of fasting of physical and moral suffering, of insomnia, of exhaustion of toxic drugs, and of nutritional disorders produced by affection of the alimentary tract. Give abundant alkaline liquids by the mouth, by the rectum, or subcutaneously

If it must be done *quickly, inject into the veins* a pint of serum of Enriquez (glucose 300 per 1 000), or alkaline water (bicarbonate of soda, 30 per 1,000)

TECHNIQUE OF COMPLETE GASTRECTOMY

(For Ulcer or Cancer)

COMPLETE gastrectomy can be performed deliberately for a very extensive callous ulcer The operation is not to be recommended for cancer, because if the gastric infiltration be very marked, infection at a distance of the glands makes an operation, often serious and difficult, useless

More often, complete gastrectomy is only decided upon in the course of the operation The operator is forced to carry it out, because the lesions are more extensive than he thought.

We made our first complete gastrectomy in 1899 for cancer We finished by an end to-end anastomosis of the duodenum with the œsophagus, there was marked ptosis of the organs, and a very long duodenum The operation was difficult, but twenty years ago we were not so skilful as to-day The patient got fatter for six months, then peritoneal generalisation took place and she died at the tenth month. The case was shown by our regretted master Aimé Guinard, at the Surgical Society of Paris

Since then, we have performed four other complete gastrectomies. Of these five operations, two of the patients died, and three recovered The mortality is, then, high 40 per cent. We have never performed this operation regularly, but always because during the course of a gastrectomy we, owing to the extent of the lesion, were compelled to extend the field of operation, and ended by performing complete resection of the organ Each time, as a result of radioscopic examination or from insufflation, the cancerous stomach appeared to us to be infiltrated contracted, without healthy tissues we declined to operate on the patient, instead of performing complete gastrectomy, which even now appears too serious, and of too slight a benefit to be recommended Otherwise, in cases of cancer, the seriousness and the difficulties of the operation would not make us hesitate, if with a serious operation, we were certain of a long period of survival, but nothing is less sure, the infection from the new growth is so extensive that removal of the stomach only removes a part of the infected area.

Of these five patients, only one was operated upon for gastric ulcer The case was shown at the Surgical Society in March, 1918 The patient is now in excellent health, has not to diet herself, and has increased 11 kilos. in weight. Granting in cases of ulcer, the more one resects of the stomach, the better for the patient, it is quite natural a complete gastrectomy would be well worth it. The description of this case has, moreover been published in a preceding work

Complete resection of the stomach varies greatly in difficulty, depending upon many factors

1 The rigidity of the abdominal wall, in muscular subjects.

2 The narrowness of the thoracic wall in subjects affected with pulmonary insufficiency

3 Raised position of the cardiac orifice of the diaphragm

OPERATIVE TECHNIQUE —*Spinal or regional anæsthesia.**

1 Cutaneous incision in J reversed, the curve following the left costal margin and the rectilinear part being directed obliquely from the cartilage of the eighth or ninth rib towards the umbilicus, *which it may pass.*

2 Opening the abdomen

3 Examination of the abdomen, to find out if the case be operable or not, and if complete gastrectomy be required or no *It is only in this last case the curvilinear part of the incision will be* made and the costal border resected

4 Resection of the left costal margin. Very useful in patients with a narrow thorax (Lecène drew our attention to this)

5 Very extensive colo-epiploic dissection, right and left

6 Ligature of the pancreatico-duodenal artery

7 Division and closure of the duodenum by a purse-string suture

8 Division of the gastro-hepatic omentum

9 Ligature of the coronary artery as near as possible to the cœliac axis

10 Stripping with a compress the upper part of the two curvatures lesser and greater, this is done with great ease

11 Preparation of the upper digestive part for purposes of anastomosis Keep naturally, a healthy part of the cardia, if it be covered by a healthy serous coat the anastomosis will be satisfactory In the two patients we lost on the fourth and fifth days

* Anesthesie Régionale Pauchet Sourdat and Labat (Doin Paris, 1920)

after the operation, the sutures became loose, and the œsophageal end was either badly supplied or thinned

12 Placing two linen stitches on the lower end of the œsophagus to fix it.

13 Careful protection of the subdiaphragmatic region, with compresses to avoid the discharge of saliva at the moment of dividing the œsophagus from the stomach

14 Division of the œsophagus from the stomach Do not place a clamp or forceps, so as not to alter the lower end of the œsophagus If a small amount of saliva be discharged, collect it on compresses Recommend the patient to be careful not to swallow

15 Introduce a gauze drain into the cardia It is to be removed at the time of the anterior œsophago-jejunal incision The patient must still be advised not to swallow saliva

16 Look for a sufficiently long jejunal loop to avoid traction Make it pass across an opening in the transverse meso-colon.

17 Fix the jejunal loop to the œsophageal end, by three or four posterior fixation stitches, between which other stitches should be inserted Altogether, there should be about six sero-serous posterior interrupted stitches or in U

18 Opening the jejunum and introduction of two half buttons of Villar

19 Through and through circular œsophago-jejunal suture Do not forget to remove the compress which has been placed in the œsophagus to avoid discharge of the saliva

20 Make the suture firm by complementary stitches, fixing the jejunum to the neighbouring tissue, and protect the suture with the remains of parietal peritoneum or of omentum

21 Complementary jejuno-jejunostomy to prevent the reflow of the bile into the œsophagus with the button

22 Closure of the abdominal wall, at one level with bronze wire.

Should the Patient be Fed Immediately or should he Fast ?—In all our cases of complete gastrectomy, we have found it better to feed the patient for one week by the rectum intravenously and subcutaneously, in one of our patients who ate at the end of the fourth day the anastomosis separated and death occurred Would she perhaps have survived if it were not for this transgression ? Was it a coincidence ? I should mention in both cases the œsophageal walls were not covered by a smooth and intact serous coat

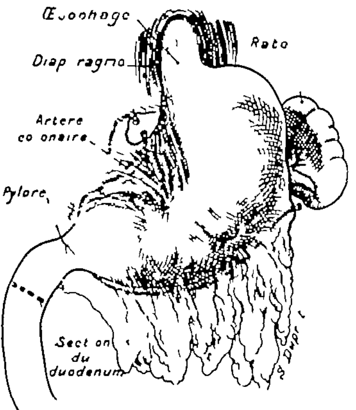


Fig. 118.—Cancer of the Stomach grafted on an Enormous Callous Ulcer, having Infiltrated nearly the Whole of the Stomach. Complete Gastrectomy

The coronary and left gastro-epiploic arteries have been tied. The dotted line on the duodenum indicates the incision made at the commencement. The operation is not possible without beginning with the liberation of the pyloric end.

Œsophage = Œsophagus. *Rate* = Spleen. *Diaphragm* = Diaphragm. *Artère coronaire* = Coronary artery. *Pylore* = Pylorus. Section d d off = Division of the duodenum.

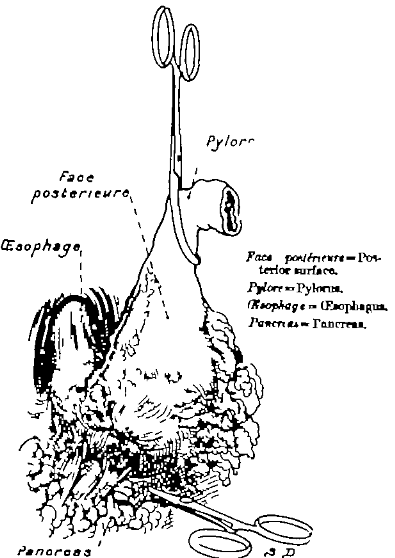


Fig. 119.—Cancer of the Stomach, Grafted on an Enormous Callous Ulcer, having Infiltrated nearly the Whole of the Stomach. Complete Gastrectomy

Freeing the posterior surface of the stomach adherent to the pancreas. Without previous division of the duodenum it would be impossible to make this separation. A compress worked by forceps separates the posterior surface of the stomach; when the adhesions are too resistant the knife must be used.

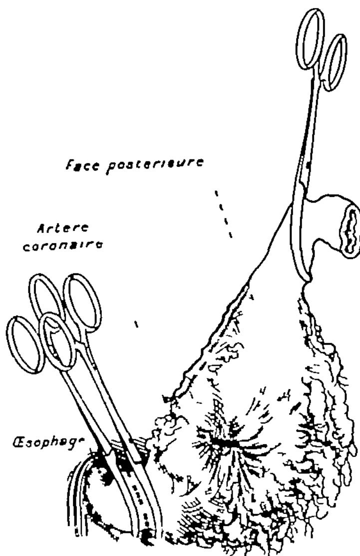


FIG 120 —CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH. COMPLETE GASTRECTOMY

The liberation of the stomach is finished. It is extremely easy when the operator has separated the pancreas, on one hand, and on the other when he has reached the gastro-splenic ligament. The stripping is then made nearly spontaneously In the present case, the division was made between two forceps. The dotted line indicates the incision. The gastric forceps is useful for preventing discharge of the gastric juice into the abdomen. The oesophageal forceps ought scarcely to wound the parts, for the vitality of the oesophageal end is generally very poor In doubtful cases, it is best to abstain from the use of this forceps.

Face postérieure = Posterior surface, *Artère coronaire* = Coronary artery
Œsophage = Œsophagus.

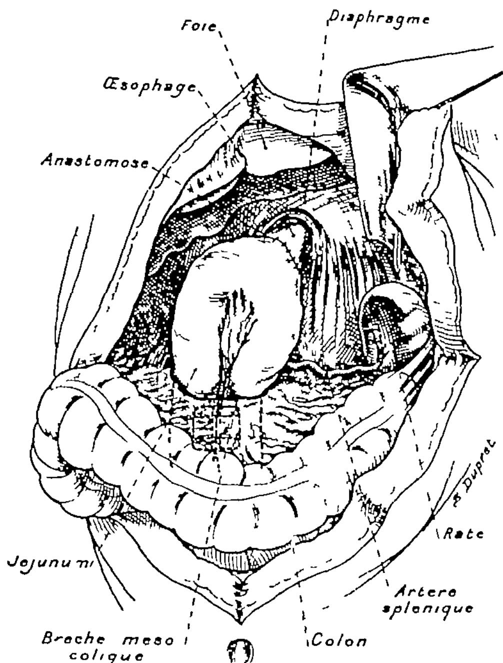


FIG 121 —CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH. COMPLETE GASTRECTOMY

Jejuno-œsophageal anastomosis. The operator brings over a very long jejunal loop, so that there shall be no traction on it because the suture between the œsophagus and jejunum does not offer all the guarantees of an ordinary gastro-enterostomy It is a good thing to apply some supplementary stitches between the convex part of the sutured jejunal loop and the tissues of the diaphragm which adjoin, for the purpose of relieving traction of the jejunum on the œsophagus. The jejunal loop can be fixed by some interrupted stitches to the meso-colic opening This precaution is not absolutely necessary

Foie = Liver *Diaphragme* = Diaphragm. *Œsophage* = Œsophagus. *Anastomose* = Anastomosis. *Rate* = Spleen. *Jéjunum* = Jejunum. *Artère splénique* = Splenic artery *Brèche méso-colique* = Meso-colic opening. *Colon* = Colon

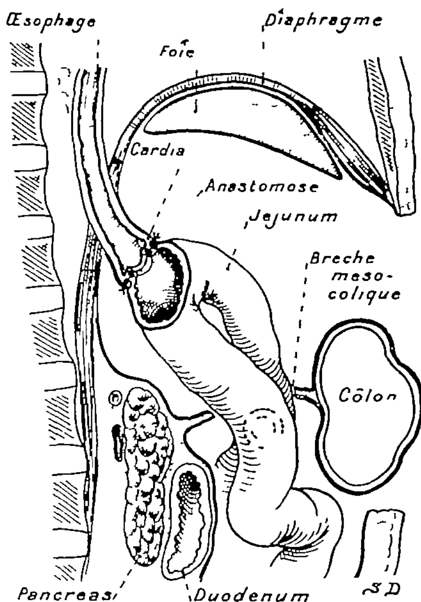


FIG. 122.—CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH. COMPLETE GASTRECTOMY

Sagittal section showing the œsophago-jejunal anastomosis. Where the loop passes into the meso-colic opening there is a jejuno-jejunal anastomosis, so as to prevent the bile flowing back into the œsophagus.

Œsophage = Œsophagus. *Diaphragme* = Diaphragm. *Foie* = Liver. *Cardia* = Cardia. *Anastomose* = Anastomosis. *Jéjunum* = Jejunum. *Brèche méso-colique* = Meso-colic opening. *Côlon* = Colon. *Pancreas* = Pancreas. *Duodénum* = Duodenum.

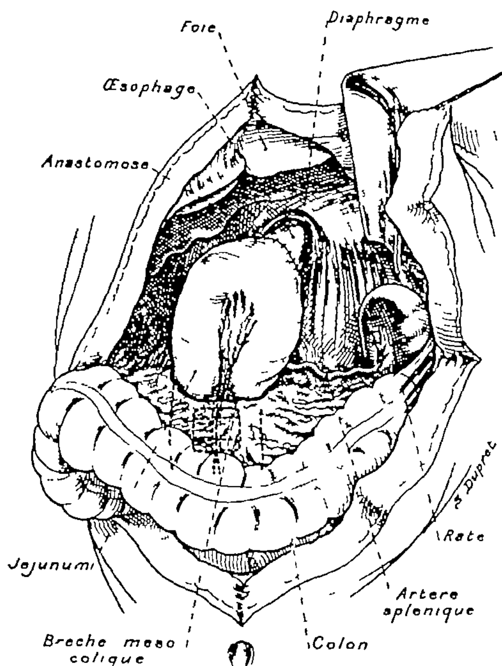


FIG 121 —CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH COMPLETE GASTRECTOMY

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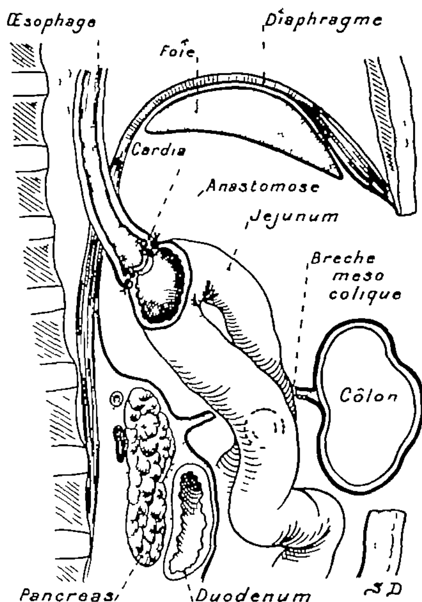


FIG. 122.—CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH. COMPLETE GASTRECTOMY

Sagittal section showing the œsophago-jejunal anastomosis. Where the loop passes into the meso-colic opening there is a jejuno-jejunal anastomosis, so as to prevent the bile flowing back into the œsophagus.

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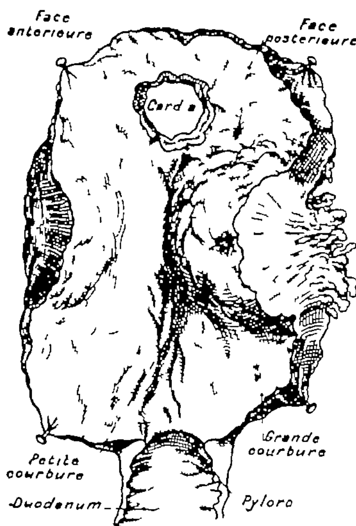


FIG. 123.—CANCER OF THE STOMACH, GRAFTED ON AN ENORMOUS CALLOUS ULCER, HAVING INFILTRATED NEARLY THE WHOLE OF THE STOMACH. COMPLETE GASTRECTOMY

Anatomical piece. The longitudinal section is at the small curvature, where a callous ulcer had arisen. On this old ulcer a cancer which afterwards infiltrated the whole of the stomach, developed. Note the different thicknesses of the gastric coats.

Face antérieure = Anterior surface. *Face postérieure* = Posterior surface. *Cardia* = Cardia. *Petite courbure* = Lesser curvature. *Grande courbure* = Greater curvature. *Duodénum* = Duodenum. *Pylore* = Pylorus.

VIII

GASTRIC AND DUODENAL ULCER

Gastro-Enterostomy in Y—Its Indications

An ulcer may be gastric, duodenal, or jejunal (secondary)

Gastric ulcer has its site, practically speaking, always on the lesser curvature, the names juxta pyloric, juxta-cardiac, anterior surface, posterior surface, are often mistakes in interpretation. If the pieces of stomach removed for ulcer be examined, the origin is seen to be the lesser curvature with extension to the orifices or to the surfaces of the stomach

The clinical diagnosis is not always easy The classic syndrome, vomiting pain, hæmorrhage, is most often absent. Hyperacidity, the time of the pain in connection with meals, the intermittency of the crises with intervals of apparent cure of many weeks' or months' duration constitute the syndrome

Radiological examination is of the greatest usefulness. Without it, two cases of diagnosis of gastric ulcer out of three are wrong Reflex dyspepsia due to calculous cholecystitis, Lane's disease, chronic appendicitis, or ptosis, account most often for the mistakes. The diagnosis is made according to the alterations of the lesser curvature and the opposite notch of the greater curvature.

Etiology —This is not precisely known. The ulcer is promoted by bad general hygiene swallowing too hot liquids, infections of the teeth, of the gums, of the tonsils and of the sinuses, by appendicitis and by chronic constipation. Tuberculosis is not the cause of but often the result of these ulcers from malnutrition and inoculation from the bacilli swallowed, coming in contact with the gastric wound The doctor who looks after and the surgeon who operates on the patient should seek for the above causes in order to diminish the chances of recurrence.

Syphilis is often the cause according to Leredde and Castex (of Buenos Ayres) it is the cause in the majority of cases, being either hereditary or acquired it is always to be looked for Every time then that gastric or duodenal ulcer does not really threaten

the patient's general health or life so as to prevent the examination the doctor should examine for a syphilitic cause by enquiry into *the family history, by the Wassermann reaction, by lumbar puncture*, and by examination of the reflexes—he should look for vitiligo, ocular symptoms, dental and osseous deformities, leucoplakia, and enquire after the personal antecedents, etc.—and lastly, by a trial treatment for three months

If the patient be medically treated, and if improvement result, do not conclude the ulcer is healed, for the fact that the symptoms of ulcer disappear for weeks and months is not only no proof of its cure, but a condition in favour of the existence of simple ulcer, since it is one of its characteristics to progress clinically by crises and by intervals of quiescence We know, moreover, by experience that in the intervals of apparent cure the ulcer is not healed, and that if laparotomy be performed on the patient the ulcer is found to be in full evolution, although during this time the patient simply *dyspeptic and suffering from hyperacidity, had no pain, and did* not vomit.

PROGNOSIS —Must chronic ulcers be submitted to operation? Why? Before forty years of age try medical treatment if it fail, operate After forty years of age always operate, because of the numbers of times the condition undergoes cancerous change Besides the examination of the pieces removed by operation shows some cancerous cells in a tenth of the cases of moderately large ulcers, and in a much greater proportion of large ones. These latter, then must always be resected. Ulcer should be operated upon—

1 *Because it threatens the life of the patient from hæmorrhage,* perforation or from stenosis.

2 Because it diminishes the vital and social activity of the patient, and exposes him to pulmonary tuberculosis.

3 Because it very often undergoes cancerous change

TREATMENT —What operation should be chosen? Gastro-enterostomy often removes the symptoms, but hardly cures the ulcer it is an operation to be recommended to surgeons who have not had a great experience in gastric surgery or in very debilitated patients.

Cauterisation (Balfour's method) combined or not with gastro-*enterostomy or with pyloroplasty* has the advantage of easiness, rapidity and mildness It is suitable to small non-callous ulcers,

mobile, not adherent, to hæmorrhagic cases, or perforating, if the patient be weak, it is also to be recommended to surgeons who have not had great experience in gastrectomy

Gastrectomy is the operation of choice. It should either be segmentary—i e, resection of the gastric ring on which the ulcer is situated—or hemi-gastrectomy—i e, removal of the first part of the duodenum, of the pylorus, and of the small tuberosity, on which the ulcer exists. The more of the stomach is resected the better the chances of permanent cure The aim of the surgeon, moreover, should be to produce hypopepsia The more hypopepsia there is after the operation, the greater the chances of cure

Gastrectomy is the operation of choice. We had performed it since 1911 It is more serious than cauterisation The latter, like gastro-enterostomy, gives a mortality of 1 per cent, gastrec tomy 5 per cent The latter, it is true, finds its application in the more serious cases. On the other hand, it gives future, more efficacious, and surer cures

Duodenal ulcer is characterised clinically, as gastric ulcer, by hyperacidity, and still more by the appearance of hunger pain—i e the sensation of hunger alleviated by the use of kaolin, of inert powder, or by food, the pain appears late—three, four, or five hours after food Its history reveals long intervals of quiescence and of apparent cure as in gastric ulcer

Radiologically there is no notch in the greater curvature or depression in the lesser, but simply increased contraction of the stomach "steer horn" hyperkinesia Its evacuation is rapid A deformity is noticed, or a notch in the duodenum but this is rare

Treatment of Duodenal Ulcer—1 *Gastro-Pylorectomy*—If the duodenum be easily accessible and mobile, resect the first portion of the duodenum and the pyloric opening and end side implantation into the jejunum.

2 *Simple Gastro-Enterostomy*—It is applicable to the majority of cases. It is a mild operation, within the capacity of every surgeon. It is a matter of indifference whether we adopt Ricard's method with vertical suspension or Hartmann's horizontal loop In all cases a short loop should be used In the cases of a hori zontal opening the efferent loop should be brought to the pylorus This last operation (dependent opening, horizontal, pre-pyloric short loop) seems to us to be the better and the simpler It is to be advised in the majority of cases, if the duodenum be easily acces sible and if the ulcer be well seen it is a good thing to bury it. It

has happened to us, indeed, on two occasions, for a secondary perforation of the duodenum to occur eight days after the operation If we had always taken the precaution to bury it, it would not have occurred In order to bury the ulcer, apply three or four stitches of sero-serous suture, as if the ulcer had perforated

Post-Operative Complications —The mortality of gastro-enterostomy for duodenal ulcer is practically nil (scarcely 1 per cent.) The only disquieting point is secondary jejunal ulcer, which is frequent (about 5 per cent.)

We hardly ever employ removal of the pylorus, when we find it necessary, we perform a gastro-pylorectomy which removes the pylorus, but this resection does not completely remove all possibility of a secondary jejunal ulcer We have observed this deplorable complication even after this operation The division of the vessels and of the nerves of the cœliac plexus suppresses, it seems, the secretion of the peptic glands, and we have for this purpose performed division of the stomachic vessels and nerves, to ward off secondary hyperpepsia Our experience has not encouraged this hope.

Operation for jejunal ulcer is often the most difficult of gastric operations

Gastro-Enterostomy in Y —It is the most rational. It was invented by César Roux (of Lausanne), who now only employs it exceptionally, it has the fault of being longer and more detailed than side-to-side gastro-enterostomy, which, moreover, gives excellent results. But it is necessary to employ it in the following cases

1 When, during an operation, the surgeon has in view a secondary gastrectomy, this will be much easier with an operation in Y

2 When perigastric adhesions exist and the surgeon finds difficulty in bringing down the stomach the implantation of the efferent loop will have to be made as near the greater curvature as possible. In a great number of instances it is a good thing to strip the greater curvature and to separate entirely the great omentum, so as to implant the efferent jejunal loop exactly on the greater curvature (marginal gastro-enterostomy)

3 When the acidity is normal or below the normal. It is the ideal gastro-enterostomy Radiology confirms its functional superiority With it there is no regurgitation of bile It is an operation every surgeon ought to know, for he may require to perform it. \

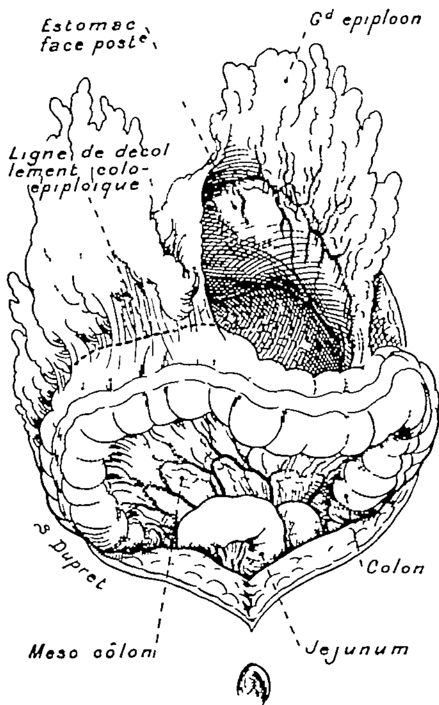


FIG 124.—DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

Separation of the colon from the omentum. At the left the separation is already made The reader sees the great omentum and the posterior surface of the stomach. At the bottom of the wound (posterior cavity of the omentum) the pancreas is visible. On the right the dotted line indicates the course of the separation of the colon from the omentum

Estomac face poste. = Posterior surface of the stomach. *Gd épiploon* = Great omentum. *Ligne de décollement colo-épiploique* = Line of separation of the colon from the omentum. *Côlon* = Colon. *Méso-côlon* = Meso-colon. *Jéjunum* = Jejunum.

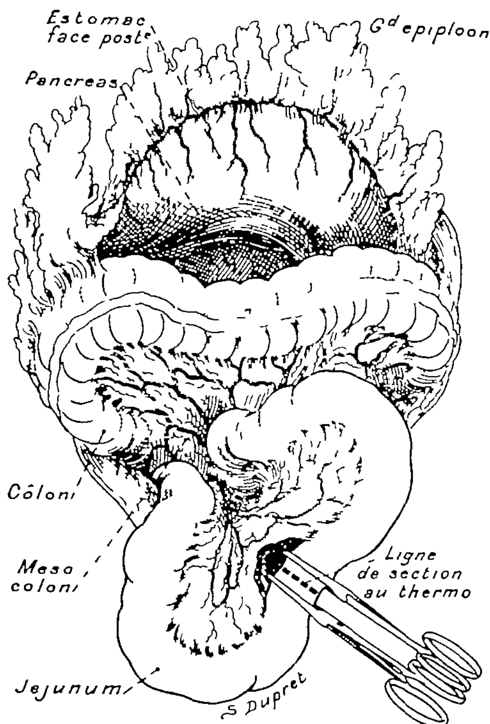


FIG 123.—DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

The colon is separated from the omentum. The operator chooses a *jejunal loop which* is to be divided 15 or 20 centimetres from the duodeno-jejunal flexure. The section ought to correspond to the summit of an arch. Begin by dividing the mesentery The section will often include the arch to give more play to the loops. The intestine is cut with the thermo-cautery the mesentery with the *knife*

Estomac face poste = Posterior surface of stomach *Gd épiploon* = Great omentum. *Pancréas* = Pancreas. *Côlon* = Colon. *Méso-colon* = Meso-colon. *Ligne de section au thermo* = Line of division with the thermo-cautery *Jéjunum* = Jejunum.

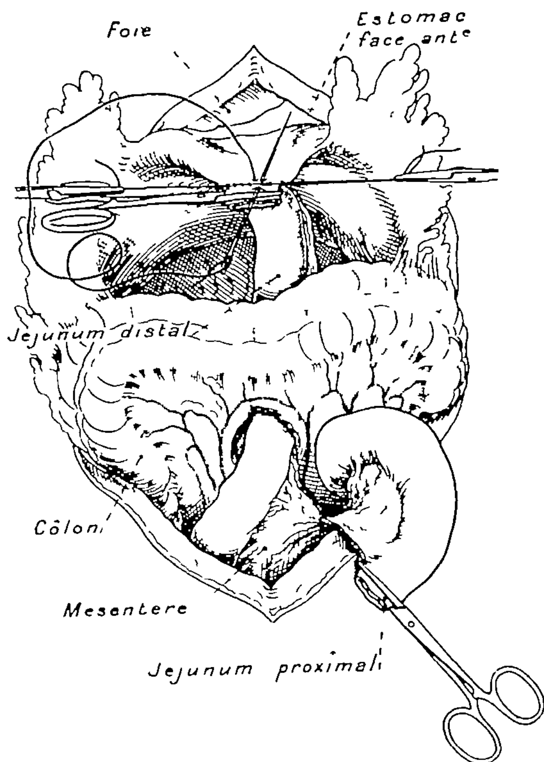


Fig 126 —Duodenal Ulcer. Marginal in Y Trans-meso-colic Gastro-enterostomy

The proximal loop is laid aside under a compress. The distal loop is brought across the meso-colon under a large arch and sutured to the greater curvature of the stomach, which has been stripped of the great omentum by brushing with a compress. In this way the loop is implanted at the most dependent point of the gastric cavity Continuous suture of catgut, with stitches close together Two fixation stitches at the extremities, one corresponding to the mesenteric border which is on the left and one on the free border

Foie = Liver *Estomac face ante.* = Anterior surface of the stomach. *Jéjunum distal* = Distal jejunum. *Côlon* = Colon. *Mésentère* = Mesentery *Jéjunum proximal* = Proximal jejunum.

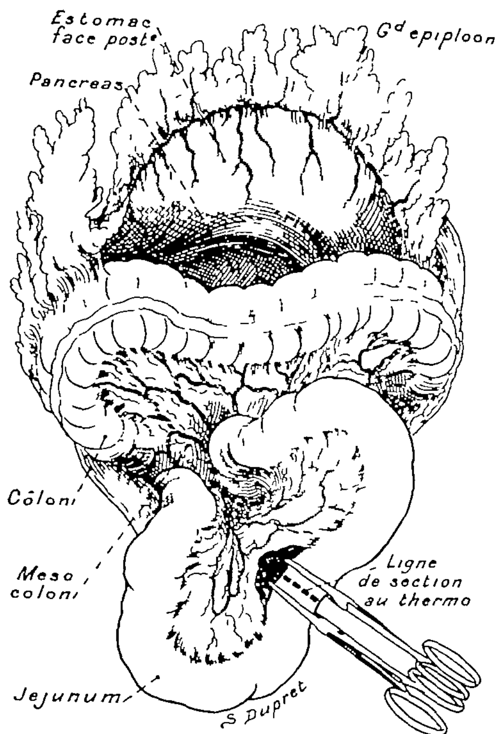


FIG 125.—DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

The colon is separated from the omentum. The operator chooses a jejunal loop which is to be divided 15 or 20 centimetres from the duodeno-jejunal flexure The section ought to correspond to the summit of an arch. Begin by dividing the mesentery The section will often include the arch to give more play to the loops. The intestine is cut with the thermo-cautery the mesentery with the knife.

Estomac face poste = Posterior surface of stomach. *Gd épiploon* = Great omentum. *Pancréas* = Pancreas. *Côlon* = Colon. *Méso-côlon* = Meso-colon. *Ligne de section au thermo* = Line of division with the thermo-cautery *Jéjunum* = Jejunum.

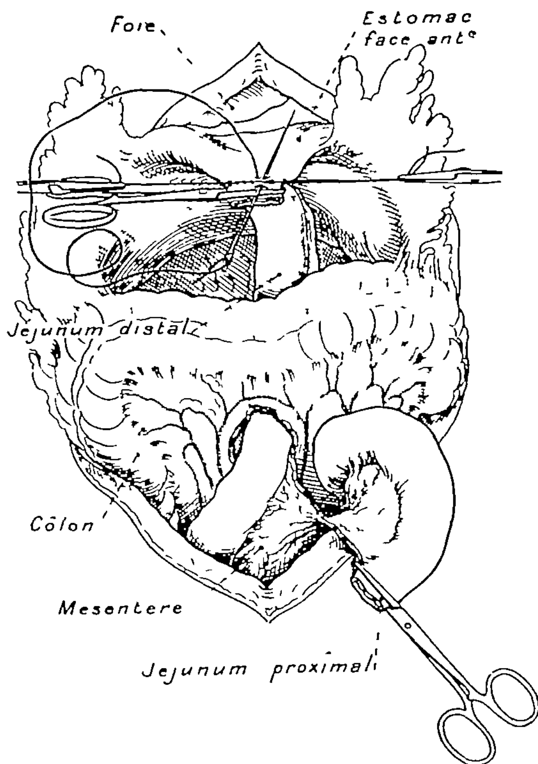


FIG 126 —DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

The proximal loop is laid aside under a compress. The distal loop is brought across the meso-colon under a large arch and sutured to the greater curvature of the stomach, which has been stripped of the great omentum by brushing with a compress. In this way the loop is implanted at the most dependent point of the gastric cavity Continuous suture of catgut, with stitches close together Two fixation stitches at the extremities, one corresponding to the mesenteric border which is on the left and one on the free border

Foie = Liver *Estomac face ante.* = Anterior surface of the stomach. *Jéjunum distal* = Distal jejunum. *Côlon* = Colon. *Mésentère* = Mesentery *Jéjunum proximal* = Proximal jejunum.

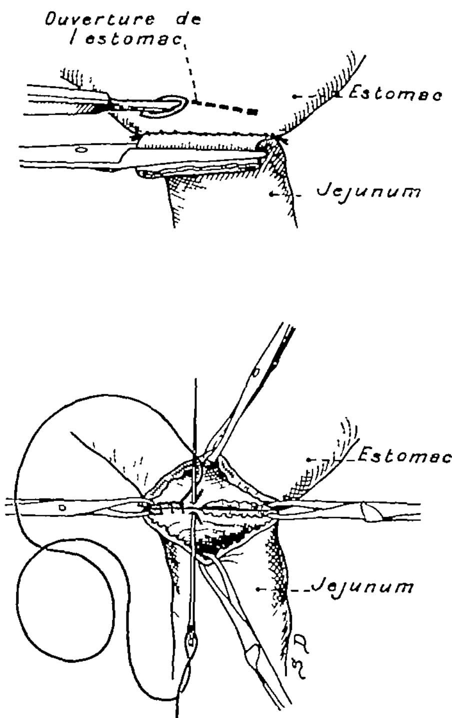
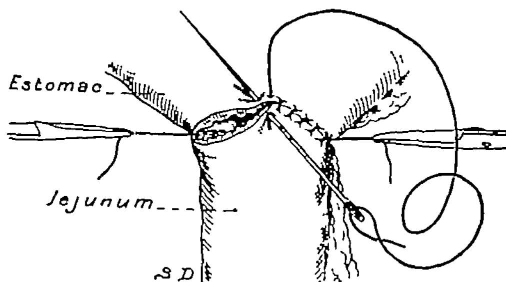


FIG 127 —DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

Above application of the posterior sero-serous suture How the stomach is opened by transfixion: the cutting edge of the knife is turned towards the reader Below posterior buttonhole through-and through suture Note the position of four Chaput's forceps which fix the tissues

Ouverture de l'estomac = Opening in the stomach *Estomac* = Stomach. *Jéjunum* = Jejunum
Estomac = Stomach. *Jéjunum* = Jejunum.



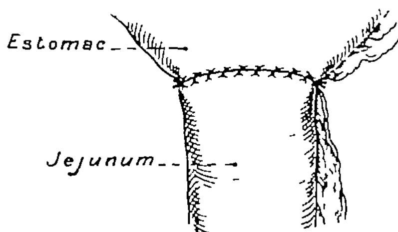


FIG 128.—DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

Above, anterior through-and through gastro-jejunal continuous suture, with catgut. Two fixative threads ensure tension of the line of suture. For the through-and through level we prefer buttonhole stitches, as in Fig 127 Below the gastro-jejunal anastomosis is finished.

Estomac=Stomach. *Jéjunum*=Jejunum. *Estomac*=Stomach. *Jéjunum*=Jejunum.

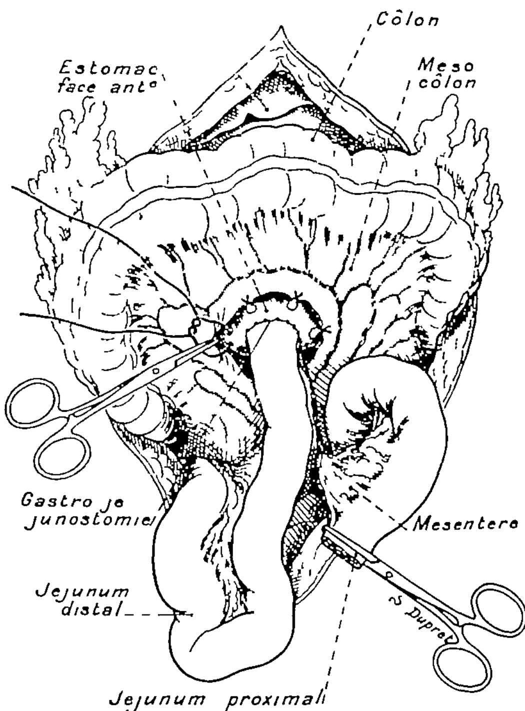
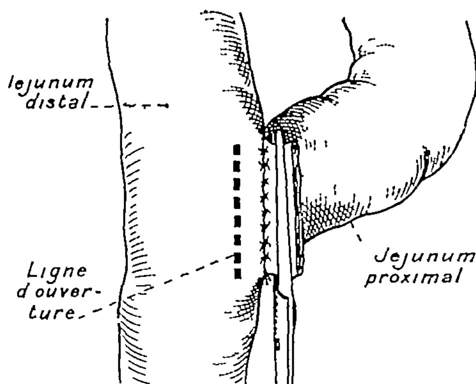


FIG 129 —DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

The gastro-jejunal suture is finished. Closure of the meso-colic opening Each stitch includes the stomach some centimetres from the implantation of the jejunum; forceps seize the edge of the meso-colic opening Do not pierce the meso-colon, otherwise there is a risk of pricking a vessel, sometimes invisible.

Foie = Liver *Côlon* = Colon. *Estomac face ante.* = Anterior surface of the stomach. *Méso-côlon* = Meso-colon. *Gastro-jéjunostomie* = Gastro-jejunostomy *Mésentère* = Mesentery *Jéjunum distal* = Distal jejunum. *Jéjunum proximal* = Proximal jejunum.



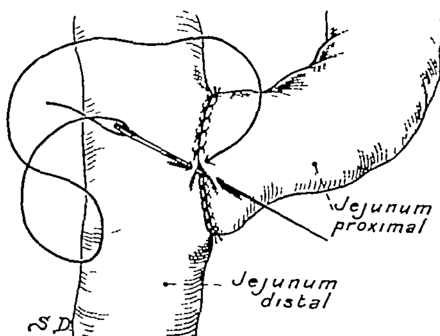


FIG 130 —DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

Above, implantation of the proximal into the distal jejunum. The dotted line indicates too large an incision the buttonhole incision on the distal jejunum ought to be narrower than the calibre of the proximal jejunum. Below the jejuno-jejunal anastomosis is finished.

Jéjunum distal = Distal jejunum. *Ligne d'ouverture* = Line of opening. *Jéjunum proximal* = Proximal jejunum. *Jéjunum proximal* = Proximal jejunum. *Jéjunum distal* = Distal jejunum.

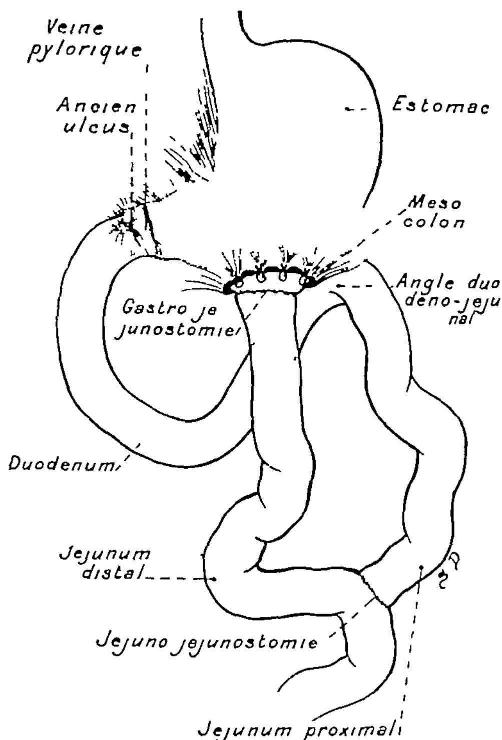


FIG 131 —DUODENAL ULCER. MARGINAL IN Y TRANS-MESO-COLIC GASTRO-ENTEROSTOMY

Gastro-enterostomy in Y is finished.

Veine pylorique = Pyloric vein. *Estomac* = Stomach. *Ancien ulcus* = Old ulcer *Méso-colon* = Meso-colon. *Gastro-jéjunostomie* = Gastro-jejunostomy *Angle duodeno-jéjunal* = Duodeno-jejunal flexure. *Duodénum* = Duodenum. *Jéjunum distal* = Distal jejunum. *Jéjuno-jéjunostomie* = Jejuno-jejunostomy *Jéjunum proximal* = Proximal jejunum.

Hemi-Gastrectomy

Hemi-gastrectomy—i e , resection of the stomach, of the pylorus, and of the first portion of the duodenum—is indicated in the three following conditions

(a) When the ulcer is near the pylorus, when segmentary resection in the middle of the stomach is not possible.

(b) When ulcer of the duodenum and of the stomach co-exist.

(c) When the ulcer is accompanied with marked hyperchlorhydria, and when, as a result, it is of advantage to remove as much as possible of the secretory portion, to diminish the hyperacidity In order to diminish the acid secretion, we have performed division of the coronary and of the left gastro-epiploic arteries, but without result.

Our resections in the middle of the stomach for ulcer of moderate size of the lesser curvature have given us some operative and functional good results, but the hyperchlorhydria persisted

Hemi gastrectomy is preferable, if the acidity be excessive

The following is our technique

1 *Abdominal Incision* —This incision is generally median, but when the ulcer is high up, it is better to make an oblique incision from the umbilicus to the left costal margin, as we have seen Lecène do

2 *Detachment of the Greater Curvature of the Stomach* —This is made by separating the colon and the omentum, or by stripping with a compress—i e , by tearing away the omental insertion the length of the greater curvature (Témoin)

3 *Liberation, Division, and Burying of the Duodenum* —The duodenum is liberated like an artery, with the grooved director, then crushed closed, and buried.

4 *Liberation of the Lesser Curvature* —This is the most important stage of the intervention its difficulty varies, according as the ulcer is adherent or not and perforates into the pancreas or not The knife is the best instrument for the liberation of an adherent ulcer The coronary artery is cut on the lesser curvature, in a healthy part, the lesser curvature is stripped of the gastro-hepatic omentum by the compress for 3 or 4 centimetres above the place of removal of the ulcer

5 *Division of the Stomach* —We apply the clamp and cut the stomach close to the instrument

6 *Closure of the Gastric Edge*—Whether we perform end side or side-side anastomosis, we close, at least provisionally, the gastric end

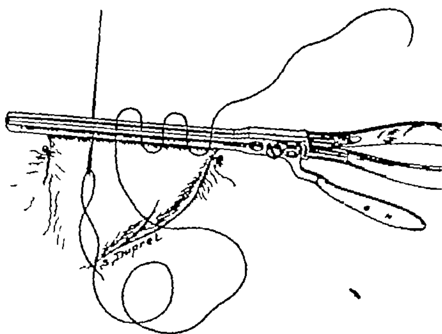
7 *Gastro-Jejunal Anastomosis*—If the stomach be large, and there be much material, we close it in a cul-de-sac, then we look for the dependent point of the gastric pouch to anastomose it with the jejunum. If the gastric stump be narrow, we make the gastro-jejunal anastomosis in such a way as to economise the tissues. This anastomosis is made at two levels, with slowly absorbable catgut. The figures show the method

8 *Closure of the Meso-Colic Opening*—This is closed when it is of moderate size and if suturing do not exercise too great traction on the gastro-jejunal anastomosis, otherwise we prefer to leave the gap open

9 *Jejuno-Jejunal Anastomosis*—We do not make it regularly, but every time the anastomosis appears imperfect, and when we fear regurgitation of bile or creation of a vicious circle, we make a jejuno-jejunal anastomosis above the meso-colic opening by suture or by button

N.B—The end to-end suture of the stomach and of the duodenum (Péan's method), which Pierre Duval employs for preference is the most physiological of the anastomoses It is to be recommended each time a too large gastric resection gives no cause for fear of traction on the gastro-duodenal suture.

10 *Closure of the abdominal wall* at one level, by bronze wire, or at two levels, catgut and bronze


S Duprel

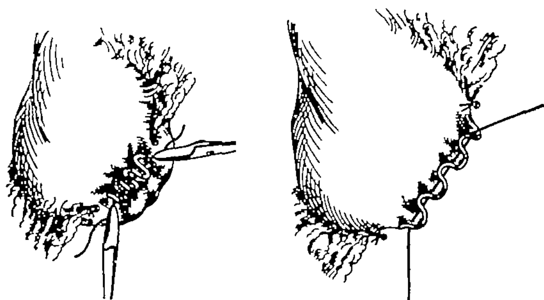


FIG 134.—GASTRIC ULCER. HEMI-GASTRECTOMY

Closure of the gastric sac. The instrument is withdrawn; the operator loops up the running stitch; the two ends of the thread are held by two forceps, so as to prevent the gastric discharges from flowing on to the field of operation.

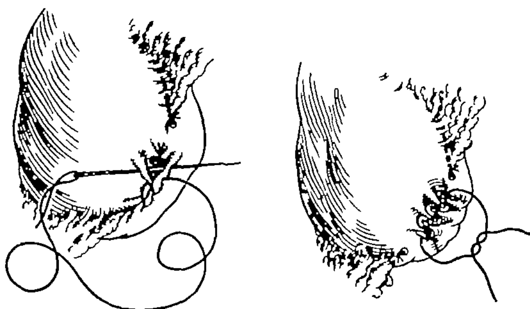


FIG 135.—GASTRIC ULCER. HEMI-GASTRECTOMY

The upper figure shows how the *gastric end is closed by a purse-string suture* and the lower figure how the through and through suture is buried under a sero-serous continuous suture

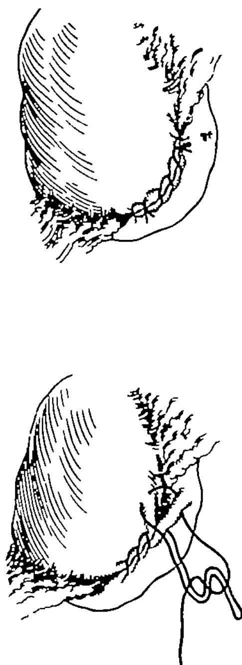


FIG 136.—GASTRIC ULCER. HEMI-GASTRECTOMY

How the stomach is closed sometimes by a second sero-serous continuous suture

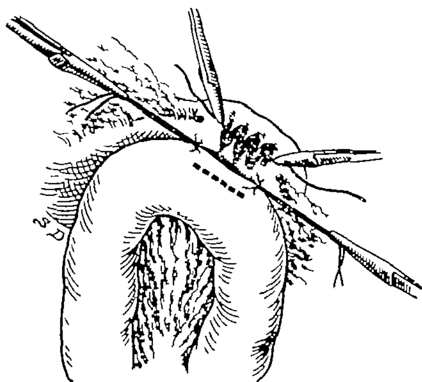


FIG 137.—GASTRIC ULCER. HEMI-GASTRECTOMY

Gastro-jejunal implantation. The gastric stump is not closed the edge is provisionally stopped up by the thread. The anastomosis is fixed by two fixation stitches. The dotted line on the jejunum shows the line of incision of the jejunum (4 or 5 centimetres): here too small.

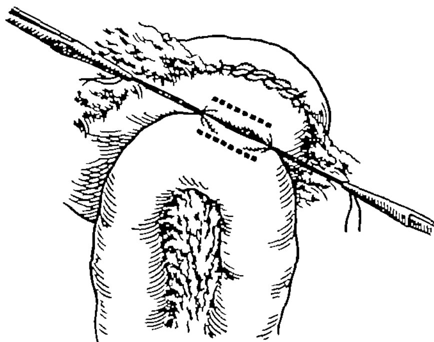


FIG 138.—GASTRIC ULCER. HEMI-GASTRECTOMY

Side to side anastomosis. The operator finds out the most dependent point of the stomach: he draws on the gastric cul-de-sac at the most dependent point which he chooses for the gastro-jejunal anastomosis. Two fixation stitches are placed at the ends of the "future" anastomosis to keep the parts fixed. The assistant stretches the two threads so that the serous surfaces are well in apposition to each other and this facilitates the application of the posterior sero-serous continuous suture

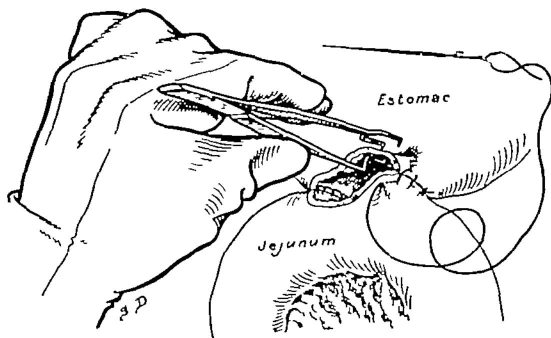


FIG 139.—GASTRIC ULCER. HEMI-GASTRECTOMY

How the through and through suture of the two anterior lips of the gastro-jejunal wound are introduced. The operator holds in his left hand Judd's forceps

Estomac=Stomach. *Jéjunum*=Jejunum.

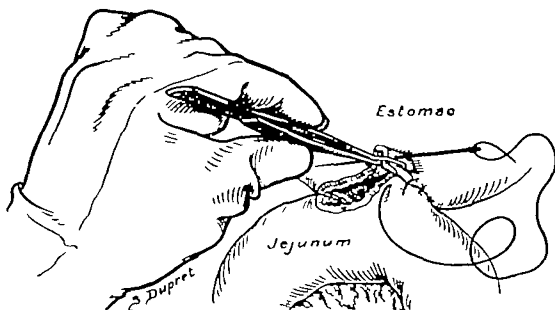


FIG. 140 —GASTRIC ULCER. HEMI-GASTRECTOMY

Technique of the hæmostatic through-and-through suture of the gastro-jejunal edge. The operator holding Judd s forceps in his left hand, closes the instrument, seizing successively the gastric and the jejunal lip on one side at a time the needle pierces the fold raised between the single upper limb and the double lower limb of Judd s forceps in this way the whole gastric edge is inverted into the intestinal cavity When this stage is finished a second sero-serous suture is applied above the through and through continuous suture. Strictly speaking this suture should be sufficient, but a second sero-serous continuous suture gives greater certainty of firmness.

Estomac=Stomach. *Jéjunum*=Jejunum.

IX

DILATATION OF THE CÆCUM

Cæco-plication

DILATATION of the cæcum is frequently seen during an operation for "chronic appendicitis"

Every intervention for chronic appendicitis, after previous and systematic radioscopy, requires

(a) An incision of 6 to 8 centimetres

(b) The exploration of the end of the ileum which sometimes permits of the removal of a Lane s band

(c) The exploration of the cæcum which is often dilated

If the operator find an abnormally large long, or loose cæcum he ought to reduce it in size This operation is a slight complementary intervention with no risk

The large intestine shows frequently displacements or mal formations—ptosis, ligaments bands adhesions—at the intestinal flexures which "overwork" Lane's kinks, segmentary dilatation of the colon congenital mega-colon, dolicho-colon are some of the modifications which can be met with with varying frequency Their pathogeny is probably identical but we have not to study them here *

Amongst these malformations of the large intestine, the commonest is dilatation of the cæcum which is characterised by lengthening enlargement laxity and displacement of the organ often coinciding with—

(a) Some alterations of the appendix, which is abnormally long, hard fibrous congested or deformed

(b) The presence of Jackson's membrane a vascular apron, fixed and transparent which is stretched from above downwards over the ascending colon and over the cæcum.

Often the appendix plays the part of a suspensory ligament instead of being free and floating in the abdomen, it is transformed into a true ligament which follows the posterior or lateral surface

* See Lane s Disease in Illustrated Practical Surgery fasc I (Benn, 1924)

of the cæcum embedded in the cæco-parietal connecting fascia It forms an accessory ligament and prevents the cæcum from dropping into the pelvis

The surgeon unacquainted with this condition, meeting thus the appendix embedded in the enveloping fascia or in the layer of the ascending meso-colon, would consider this anatomical condition the result of chronic inflammation, and from appendicectomy anticipate with certainty the removal of some of the abdominal symptoms of which the patient complains, it would not be so This appendix, generally, is healthy or fibrous, and hence inoffensive, but the cæcum, made heavy by slight stasis, is fixed to a new ligament to avoid dropping into the pelvis. These patients suffer from the cæcal dilatation, and not from the appendix, and it is the cæcum which ought to be treated and contracted

But the following anatomical fact can be noticed the appendix, situated behind and internal to the cæcum, is connected into a kind of vertical band, on which the end of the ileum kinks (controlling appendix of Sir Arbuthnot Lane), stasis of the ileum results, the removal of even a healthy appendix causes the disappearance in these cases of the stasis and the functional symptoms which accompany it, it is a simple means of getting rid of a most troublesome pathological phenomenon. But the surgeon is under the illusion that it is the removal of a diseased appendix which has caused the dyspeptic and toxic symptoms of which the patient complained to disappear

The displacements malformations, elongations and dilatations of the large intestine produce dyspeptic symptoms, abdominal uneasiness and more or less marked phenomena of chronic stercoræmia These latter show themselves at a maximum in cases of mega-colon, and provoke the frequent complex and nearly always incomplete clinical syndrome of Lane's disease The majority of the nutritional disorders are the result of chronic stercoræmia, acting unfavourably on the glandular organs, there result cellular alterations which give rise to thyroidal suprarenal hepatic insufficiency and the cholæmic state, etc

The practitioner ought to remember the following principles

(a) Every time a doctor is consulted by a person suffering from gastric disorders he ought, after complete clinical examination, to interrogate the patient analyse the gastric juice and then send him to the radiologist who ought not only to examine the stomach but also the complete intestinal digestion.

(b) A radioscopic examination should be made not only of the intestine, but also of the stomach of every patient showing signs of intestinal disorders, the examination should not only include a barium meal, but an injection of barium.

(c) Every time a radiologist makes an examination of the digestive tract, he should not be content with one or two test meals followed by a long, unnecessary and insufficient report, but he should send back the radioscopic photographs or the calculations of the digestive tract and tell the doctor how long the meal takes to pass through the ileum, the cæcum, and through the colon He should remind him that normally the ileum ought to be empty at the end of six hours if it, then, be empty at the end of twelve hours (the patient purged and with a stomach emptying itself normally), he has iliac stasis. The cæcum and the ascending colon ought to be empty at the end of twelve hours, if they contain bismuth at the end of twenty four or thirty six hours, there is cæco-colic stasis

It must be understood, to diagnose Lane's disease, and to think of a radical operation as a short-circuit or a colectomy, it is necessary at the same time to find functional disorders of nutrition, etc , which justify operation

Let us suppose, then, a patient has chronic appendicitis. He is submitted to radioscopy The test-meal shows slight delay in the evacuation of the cæcum—*e g* , eighteen hours instead of about twelve The patient complains of nausea, of loss of appetite, of painful digestion, of a sensitive spot in the right iliac fossa, corresponding to the appendix. Every doctor in these conditions advises removal of the appendix, the surgeon will not be content with removing the appendix, but will also examine the cæcum and the end of the ileum (band and kink of Lane) This intervention is of slight gravity, it can be done under local anæsthesia But must it be done if it be certain it will be insufficient ? (It should be recognised as insufficient if there be marked stasis and the general condition precarious) If the patient show signs of dyspeptic symptoms toxic and general which lead to the supposition of serious trouble from stercoræmia ablation of the appendix, cæco-plication, or division of a Lane s band will not suffice, it is necessary to consider the indication for a short-circuit or a colectomy in the future.

What is then to be done ? Decide between two things

(a) Perform a small operation" appendicectomy, cæco-plication, division of a Lane s band, or

(*b*) Do not operate but in the two cases treat the case medically

Sometimes, cæco-plication in less serious cases (the majority) causes a great improvement, if it do not suffice, six months or a year later, resort to, it may be, a short-circuit, or to a colectomy

In every case, before deciding on direct operation for the intestinal stasis, *the operator should entrust the* patient to a doctor, who will subject him to complete treatment medical, physical, opotherapy, gymnastics This treatment will *consist of massage, abdominal* and respiratory (Pescher's bottle), gymnastics, opotherapy, fresh air, the use of paraffin, thermal cure, diet, etc This treatment ought always to be employed even in the distinctly surgical cases for it presents the three following advantages

1 In cases of serious operation, it will prepare the patient for it and make him stronger The patient will bear the operation well and recover very quickly

2 This treatment constitutes a "trial remedy" it is sometimes difficult to propose to the patient and to the family surgical treatment for a pathological syndrome which, in the eyes of many of his confrères, belongs to medical pathology The fact of treating the patient medically and thoroughly by all the means we have *indicated for five or six months, without appreciable result authorises* the physician to appeal to the surgeon

3 This medical treatment continued after the operation, quickens convalescence and ensures a permanent cure Once the patient is operated upon he must not be considered cured moreover, the sufferer from intestinal stasis for many years is the possessor of poor muscular nervous and glandular systems which if not too much altered, can be remade but with more or less integrity and more or less quickly again if the patient has carried out previously medical physical and dietetic treatment etc he *will continue it* of his own free will from habit and by routine after the operation, this treatment *slightly beneficial before the operation* gives, on the contrary marvellous results after the anatomical alteration in the patient's condition and in this way considerably shortens a convalescence which is often long

Medical treatment is then necessary from a moral and physical aspect but it must be well carried out Again we repeat it is the co-operation of the doctor of the masseur of the gymnast and of the patient who ought to submit himself regularly and *perseveringly* into their hands

Pre-operative medical treatment, then, is obligatory in cases even where intestinal (cæcal or iliac) stasis is well marked and where the general symptoms are sufficiently serious for the question of short circuit and colectomy to be entertained In all cases where the stasis is absent or slight, in cases where the doctor believes removal of the appendix and plication of the cæcum will be sufficient, it is useless to delay this slight operation, which does not prevent the patient from submitting himself to the completion of the cure of which we have spoken

Indications —CHRONIC APPENDICITIS —Every case of chronic appendicitis ought to be examined radiologically Never resect the appendix in a subject affected with chronic appendicitis without examination of the intestinal digestion and without the doctor knowing if intestinal stasis exist or not If the stasis be insignificant, and the general health good, or even if resection of the appendix be advisable as a trial, the operator should make the Jalaguier Walther incision in the right iliac fossa, as in chronic appendicitis, an incision which in the circumstances should be a *little longer* than is usually practised since the cæcum and the end of the ileum must be explored. The appendix should be resected, and whether it be diseased or not the end of the ileum and the cæcum should be examined If the operator chance to find a suspended appendix over which the end of the small intestine is kinked, he may be certain removal of this appendix will procure considerable benefit to the patient since it was the cause of the iliac stasis If an iliac band of Lane exist kinking the end of the small intestine, the surgeon should divide it and remove the raw surface by some stitches If the cæcum be of moderate size or large and liable to undergo plication, be it existent or not, the operator will do well to fix the cæcum to the raw surface of the terminal mesentery, in this way, Lane s band will not recur and the cæcum will be immobilised.

If the cæcum be voluminous distended and flaccid cæco-plication should be performed—a slight operation, lasting three to five minutes.

We have said the abdominal incision should be a little larger than for a perfectly quiescent appendix because, during the reduc tion of the plicated cæcum the stitched organ must not be wounded rough manipulation in returning the organ into its place might tear the coats of the sutured intestine

2 DURING SOME LAPAROTOMIES —We often remove the appendix, perform cæco-plication, and afterwards division of a

Lane s band in the following conditions during a cholecystectomy, a *gastro-enterostomy*, a nephropexy, an ovariotomy, an hysterectomy for fibroma, or an hysteropexy, and if the condition of the patient permit it we examine the appendix and remove it. If the cæcum be large, lax and mobile, we perform cæco-plication. If the ileum be kinked, we divide Lane's band. In all cases, cæco-plication is a slight complementary operation which is performed at the same time as appendicectomy

Technique of the Operation—1 INCISION OF WALTHER JALAGUIER.—It is easier to enlarge than that of MacBurney The cæcum and the appendix are brought outside, the appendix is removed It *can* be buried separately or hidden under the continuous suture which contracts the cæcum Explore the end of the ileum, see if there be a kink or band of Lane

2 *CÆCO-PLICATION*—The operator unites by a continuous suture two longitudinal bands of the cæcum In order that this suture may be a good and regular one, it is wise to mark it out by three interrupted stitches to fix the parts These three stitches should be, one near the appendicular stump, the other 10 or 12 centimetres from it where the cæcum is continued by the ascending colon, where approximately the dilatation ceases, and the third at an equal distance from the two preceding stitches These three stitches include not only the two longitudinal bands of the cæcum, *but also* the wall separating the two bands It is unnecessary to take in the *bottom of the wound by the continuous suture because the latter*, taking its foundation on the bands finds a resistant surface. The operator should paint with tincture of iodine the serous surface (between the bands), which should be buried the iodine produces adhesions

The operator then introduces three interrupted linen stitches which *serve not only to mark out the suture* but also allow the assistant to stretch the intestinal wall, so that the two longitudinal bands become approximated this facilitates the suture. The suture may be of slowly absorbable catgut 00, or of linen *Once* the continuous suture is applied, the cæcum is returned into the abdomen Reduction should be carried out carefully and slowly by placing two Farabœuf's retractors on the edges of the wound, so that the cæcum can be returned without dragging on the intestinal coats, in the absence of this precaution there is a risk of tearing them, with possible resultant septic infiltration from the denuded mucosa, or a pericæcal abscess, a serious complication for so slight an operation

The results of this operation are the same as after an ordinary appendicectomy, the patient remains in bed six or seven days, the stitches are removed on the eighth day, and the patient leaves the hospital at the end of ten days

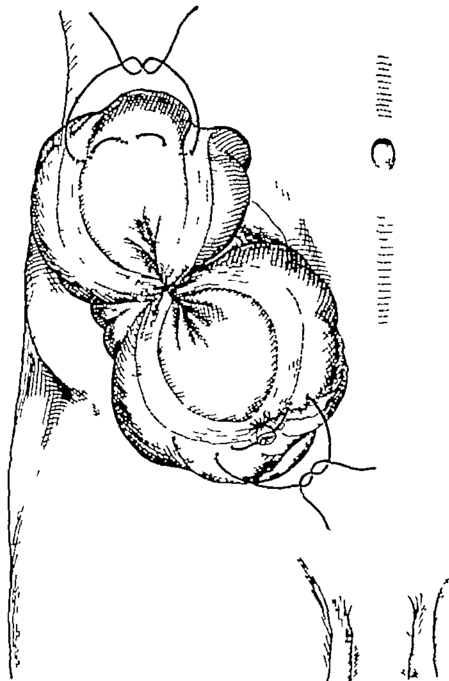


FIG 141 —DILATATION OF THE CÆCUM CÆCO-PLICATION

The dilated cæcum is brought outside the appendix has been removed. Three linen stitches are introduced Note one has been placed beyond the appendicular stump, which, in this way will be buried under the suture (burying is not, however indispensable) another is placed where the cæcum is continued by the ascending colon, and where its calibre becomes nearly normal. At equal distance from the two *extreme* stitches a third is applied which, in this figure, is knotted and shows the size of the cæco-plication The three stitches include the longitudinal bands and the intermediate cæcal wall. The operator paints with tincture of iodine the serous surface between the longitudinal bands to facilitate immediate adhesion and to avoid the *production of a cavity between the cæcal wall and the suture.*

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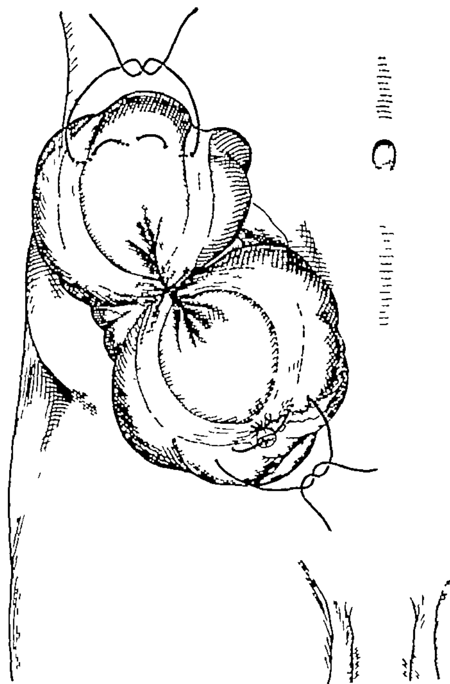


Fig 141 —Dilatation of the Cæcum Cæco-plication

The dilated cæcum is brought outside the appendix has been removed. Three linen stitches are introduced. Note one has been placed beyond the appendicular stump, which, in this way will be buried under the suture (burying is not, however indispensable) another is placed where the cæcum is continued by the ascending colon, and where its calibre becomes nearly normal. At equal distance from the two extreme stitches a third is applied which, in this figure is knotted and shows the size of the cæco-plication. The three stitches include the longitudinal bands and the intermediate cæcal wall. The operator paints with tincture of iodine the serous surface between the longitudinal bands, to facilitate immediate adhesion and to avoid the production of a cavity between the cæcal wall and the suture.

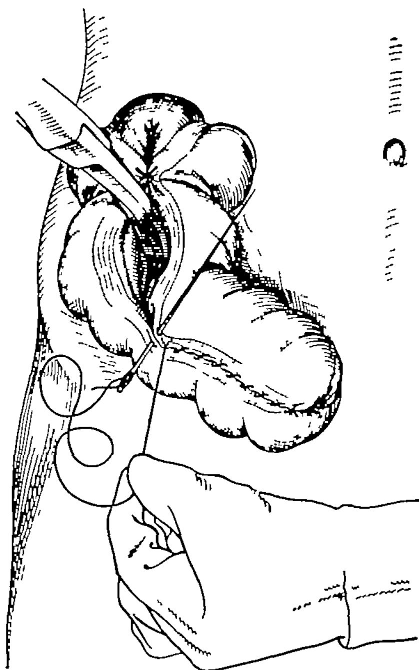


Fig. 142.—Dilatation of the Cæcum. Cæco-plication

The three foundation stitches are tied half of the continuous suture is applied. The closed scissors bear upon the intermediate part of the cæcum to bury it. This surface has been painted with tincture of iodine to produce immediate adhesion.

X

CONGENITAL MEGA-COLON

Complete Colectomy

THE large intestine is frequently the site of displacements, variations in size of kinks, ligaments, or of peritoneal bands As a result delay occurs in the intestinal digestion, then functional, digestive and nutritive disorders, lastly, malformations of the colon, such as distension and ptosis of the cæcum, formation of Jackson's membrane, distension of the transverse colon, lateral agglutination of the descending or ascending with the transverse colon, dolicho-colon, etc. These malformations can be accompanied by symptoms of general intoxication, of chronic stercoræmia, and then constitute 'Lane's disease.'

What are the hygienic faults which favour these anatomical alterations? By what disorders of metabolism does the disease begin? How many generations are necessary to produce these displacements, elongations and dilatations of the colon? We do not know, in every case it is probable congenital mega-colon is only an exaggeration, the ultimate phase of one of these mal formations, slowly acquired during the course of many generations In congenital mega-colon, moreover the malformations noted often in Lane s disease are found to an exaggerated extent mega cæcum, dolicho-colon presence of kinks and of bands, distension of the intestine with markedly hypertrophied coats as a result of the effort to produce evacuation etc Besides, without taking mega colon as an example if we simply examine chronic iliac volvulus, we find there also bands and hypertrophies which have required for their production congenital elongation of this intestine and a contraction of the meso-colon which has ended in the formation of a meso-colic pedicle around which the intestine is twisted. There is thus produced progressively a dolicho-colon and pediculisation of the meso-colon as a result of contraction from irritation, and a way for an iliac volvulus is thus prepared

Congenital mega-colon is only the exaggeration of the elongation of the distension and of the hypertrophy of a part of the colon

which, for one or more generations, fights against an obstacle, due to a kink, and for this reason complete colectomy appears to me to be the surest and most radical operation

Congenital mega-colon is a serious, incurable disease, requiring surgical treatment directly it is recognised, and that for three reasons

1 Because it brings in its train obstinate chronic constipation, almost complete, which compels the patient to empty the pocket of the colon from time to time by means of injections on which he is regularly dependent

2 Because it threatens the patient with acute obstruction from volvulus

3 Because, as every condition producing chronic stercoræmia, it threatens the vitality of the individual, and reduces his intellectual, vital and social capabilities in a very marked degree Patients suffering from this infirmity become old before their time, often suffer from headache and general malaise their muscular system is feeble, their circulatory and pulmonary systems altered, they die generally of pulmonary tuberculosis or of early arterio-sclerosis

There is no medical treatment for congenital mega colon, some doctors have believed they could, by daily intestinal injections, decrease the size of the pockets in the colon but it is not so, and we have been able to prove it by two examples

1 When a rubber tube is introduced *per anum* it never reaches the pocket but becomes bent on itself in the rectal ampulla Moreover, injections very high up are not possible in any case The large number of attempts we have made, prove that every tube introduced into the rectum Plombières or Châtel Guyon, bends on itself after it has reached 6 or 7 centimetres The use of long tubes has then always been a snare

2 Injections of the pocket never lead to atrophy of the latter In two patients with pockets in the colon we have performed a colostomy on the dilated part and we have ordered them two injections daily for years We have operated afterwards on these patients the pockets were in no wise contracted

We have tried without success 'small surgical operations," plications and pexies, we have had moreover the opportunity of operating on patients who had been subjected at the hands of other surgeons, to colo-plications and colo-fixations these latter availed nothing, we have had to perform secondary colectomies

which completely cured them We could not find in the intestine any trace of the former operations

Twice we have performed ileo-sigmoidostomy, or cæco-sigmoid ostomy, which united the colon below the pocket with the ileum or the cæcum, they availed nothing The fæcal matters ascended into the pocket as before The evacuations were neither more nor less frequent.

After having tried the different operations proposed for mega-colon, we are convinced resections are the only ones which give a complete result. Experience has confirmed this treatment for mega-colon Twenty and eighteen years since we made a short circuit in a child (cæco-sigmoidostomy) and in an adult (ileo-sigmoidostomy) In both we have been obliged to make an anus secondarily over the pocket, because all the discharges passed back to the dilated segment as before When this anus was made the fæcal matters have always passed by the fistula, never by the natural anus. Thanks to daily injections by the artificial anus these patients were so improved generally that they were not willing for a secondary colectomy to be performed, which was, however, indicated The stercoræmia having disappeared, their general state has improved and the benefit resulting has been sufficient for them.

The experience of these two patients is also very interesting because it refutes the practice of injections, formerly proposed Their pockets have never contracted The only rational and beneficial treatment is resection. Should partial or complete colectomy be performed ? That depends on the case.

(*a*) *Partial Colectomy* —If, as is possible, the dilatation be confined entirely to the sigmoid loop, the size of which fills the whole abdomen a simple resection of the dilated intestine and end to-end suture of the two extremities can be performed This operation, which we have carried out on eight occasions six times with success, can be difficult or dangerous owing to two conditions hypertrophy of the intestinal walls which lend themselves badly to suturing or by the upper end of the colon becoming filled with fæcal matter The septic discharges accumulating below the suture can produce secondary separation of the wound

If the surgeon find the slightest difficulty in making the end-to-end anastomosis he ought not to leave the suture to itself in the abdomen *he should fix the line of reunion into the parietal wound*

Otherwise, before making the resection, if the surgeon think the end to-end suture will be difficult he should not attempt it, but be content with exteriorising the dilated loop contracting the abdominal wound, and resecting the loop The two intestinal ends should first be sutured laterally, in their course through the abdominal wall. The two ends of the intestine resected should appear 5 to 6 centimetres above the skin ten days later into this artificial anus, parallel to the two ends in the two cavities of the colon, a clamp opened and closed slowly should be inserted This clamp should bite into the coats of the colon, crush them, and produce enterotomy Three months later the artificial anus should be closed This method appears to be anti surgical, but offers the advantage of simplicity, it cures the patient without risk, even in the hands of surgeons little skilled in intestinal surgery

(b) *Complete Colectomy* —This is indicated in the greater number of cases. Moreover, the cæcum is very often dilated If it be not the cæcum, it is the transverse colon which takes part in the dilatation Sometimes even the dilatation extends from the cæcum to the rectum

In every case practically speaking, every dilatation of the sigmoid which co-exists with another dilatation ought to be called complete dilatation, and requires complete colectomy—an operation which in cases of mega-colon, is easier than in any other circumstance as a result of the laxity of the meso-colons

Complete colectomy is easier and a milder operation than partial colectomy

The operation is carried out as follows

Separation of the colon from the omentum (Lardennois Okinczyc)

Separation of the colon from the abdominal wall (Pierre Duval)

Division of the meso-colic vessels

Division of the ileum close to the cæcum.

Division of the large intestine immediately below the dilatation

End to-end anastomosis.

A rubber tube should be placed in the rectum and should pass beyond the anastomosis to drain the ileum to the anus

If for some reason there be a disproportion between the ileum and the end of the intestine if the anastomosis by suturing be difficult it is sufficient to introduce a rubber tube into the two intestinal ends tie them over the tube and bury the ligature under a sero-serous continuous suture as follows

The large intestine is removed

A large rubber tube is introduced by the operator by the abdomen into the small intestine and tied into it, the lower end of the tube is pushed by the operator into the terminal part of the large intestine, which has been divided it is caught from the outside by an assistant, who has pushed a clamp into the anus. The tied iliac end is lowered until it comes in contact with the lower part of the colon. Another thread is knotted on this terminal intestine near the extremity of the small intestine. The two intestinal ends are exactly apposed Whilst the operator fixes the walls of the inferior end with two Châput's forceps, the assistant continues to drag on the ileo-anal tube The ledge at the junction of the ileum and the colon is invaginated into the rectal end, the ledge of this invagina tion is fixed by a circular running suture with catgut, the operation is finished The tube remains in position eight days

What procedure is to be adopted in cases of mega-colon, complicated by acute obstruction ?

In one case we performed complete colectomy, followed by end to-end ileo-sigmoidostomy, removing thus *en bloc* the pocket of the colon with its septic contents, formed by the whole large intestine, the case was one of complete dilatation The patient was cured This procedure appears to me to be suitable to a number of cases

What ought to be done ?

Median laparotomy Evisceration of the dilated and twisted loop

Be careful not to open and empty it.

Be careful not to reduce and fix it.

Choose between a simple and easy operation—*i e*, segmentary resection in two stages or complete colectomy in one which removes the toxic matters and cures the patient permanently in fifteen days

In the first case the surgeon exteriorises the loop cuts and ties the artery or the nutrient arteries fixes the two loops forming a pedicle to the wall, contracts the abdominal wound at one level, and then divides the two ends of the intestine 5 to 6 centimetres from the skin The obstruction collapses Eight days afterwards a clamp crushes the inter-colic septum, two months later closure of the artificial anus brings about a cure

To sum up the surgeon who wishes to treat a mega colon can perform in non strangulated cases, an ileo-sigmoidostomy as a preparatory operation for secondary colectomy, which as a result is

much easier and milder It is its only indication. In all the other cases resection should be performed, complete in cases of complete mega colon, partial in cases of partial mega-colon or where the patient is weak

Resection and colo-colic, or better, end to-end ileo-sigmoidal anastomosis, is the procedure of choice, but if any difficulty occur, do not seek for brilliant surgery, but fix the two intestinal ends to the skin, thus making an artificial anus, the cure of which will be easy

Complete colectomy in all cases appears to me personally to be the operation of choice.

Summary

(*A*) **Partial Mega-Colon** Resection of the Dilated Segment

(*a*) *Easy suture* Circular end to-end colorrhaphy
(*b*) *Difficult suture* Fixation of the two extremities to the wall then cure of the anus two months later
(*c*) *Complete colectomy*

(*B*) **Extensive or Complete Mega-Colon** Complete Colectomy

(*a*) *Cachetic subject* begin with a short-circuit (cæco- or ileo-sigmoidostomy) Perform secondary colectomy three months later

(*b*) *Resistant subject* Complete colectomy in one stage (operation of choice)

(*C*) **Mega-Colon Complicated with Volvulus**

Partial colectomy and fixation of the two intestinal ends to the wall. Secondary cure of the artificial anus

Complete colectomy in one stage with end to-end ileo-sigmoidostomy

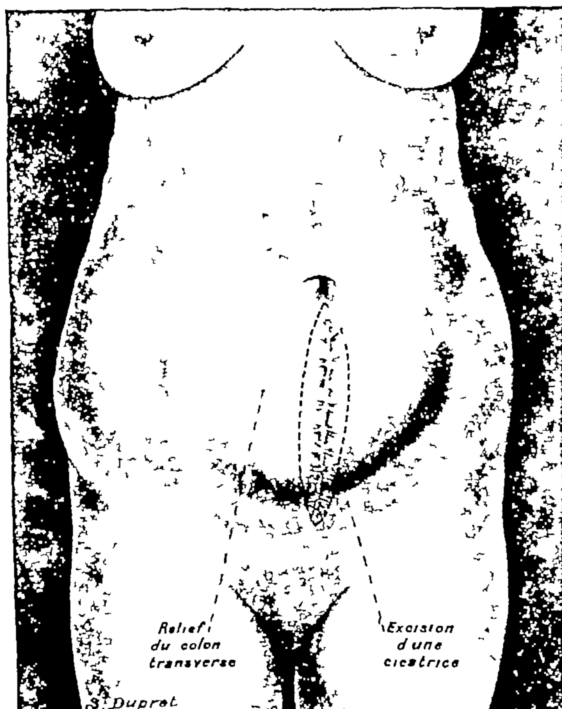


FIG 143.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Appearance of the abdomen before operation. A loop of distended colon prominent under the skin. The cicatrix is the remains of an operation for plication and fixation of the colon. Result nil.

Relief du côlon transverse—Outline of the transverse colon. *Excision d'une cicatrice*—Excision of a cicatrix.

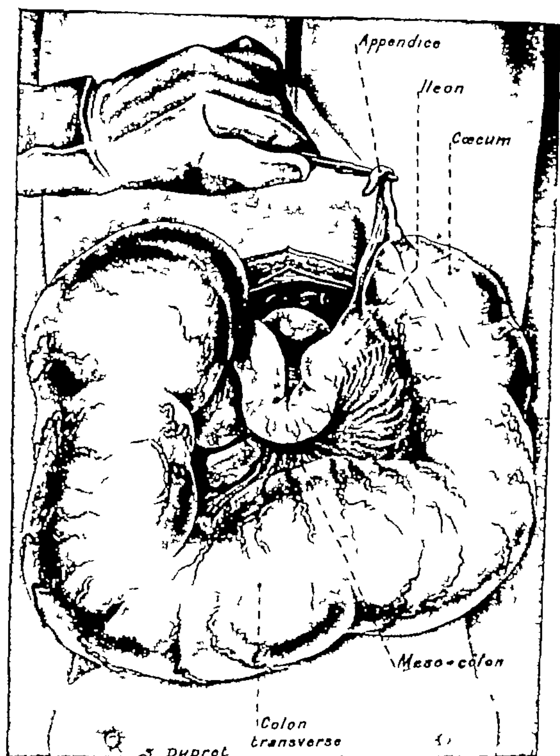


FIG. 144.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

The abdomen is opened. Appearance of the mega-colon which includes nearly the whole of the intestine

Appendice = Appendix. *Iléon* = Ileum. *Cœcum* = Cæcum. *Méso-côlon* = Meso-colon. *Côlon transverse* = Transverse colon.

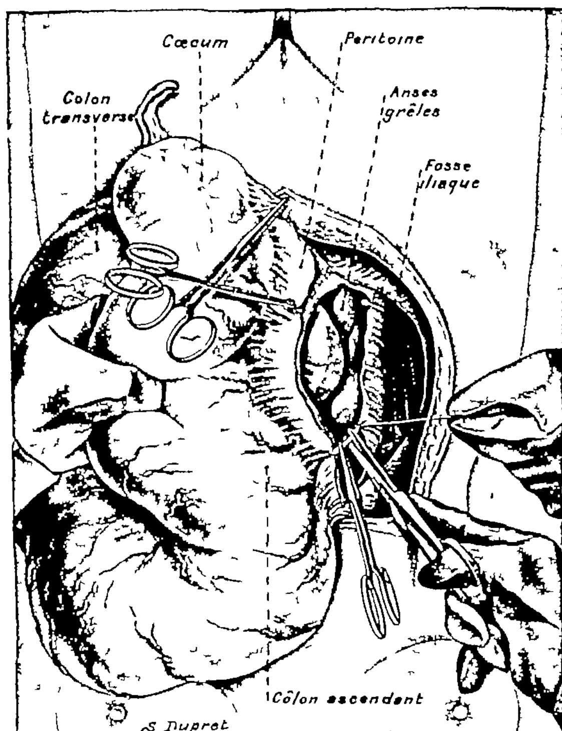


FIG 145.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Freeing the ascending colon and the cæcum. The operator has separated the colon from the abdominal wall and divided the meso-colon. These two stages were made here almost at the same time, owing to the extreme laxity of the meso-colic ligaments.

Cæcum=Cæcum. *Péritoine*=Peritoneum. *Côlon transverse*=Transverse colon. *Anses grêles*=Loops of small intestine. *Fosse iliaque*=Iliac fossa. *Côlon ascendant*=Ascending colon

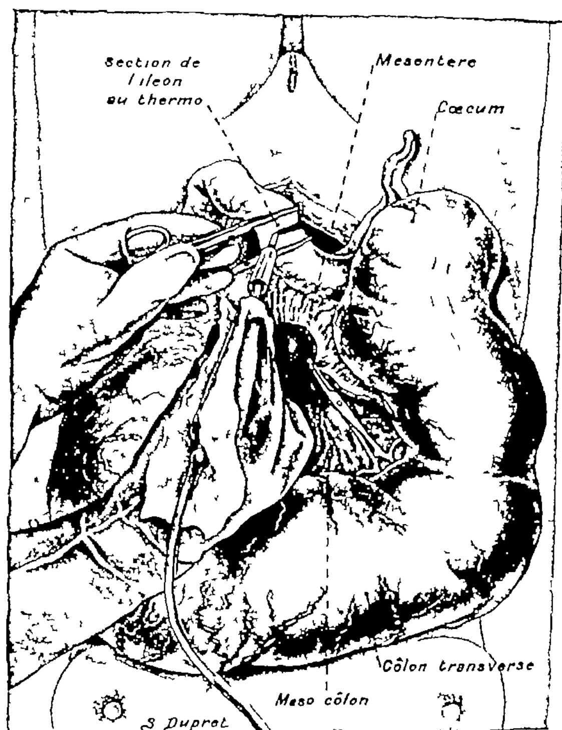


FIG. 146.—CONGENITAL MEGA-COLON. COMPLETE COLECTOMY.

Division of the ileum between two Kocher's forceps, 4 or 5 centimetres from the cæcum, after the right meso-colon had been divided.

Section de l'iléon au thermo = Division of the ileum by the thermo-cautery. *Mésentère* = Mesentery. *Cæcum* = Cæcum. *Côlon transverse* = Transverse colon. *Méso-côlon* = Meso-colon.

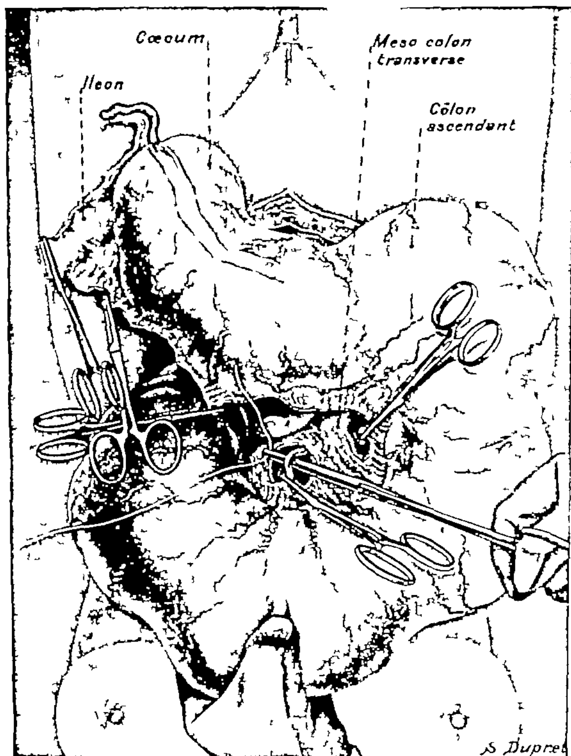


FIG 147 — CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Division of the transverse meso-colic vessels (here very large). Each vascular pedicle is laid bare before being tied.

Cæcum = Cæcum. *Méso-côlon transverse* = Transverse meso-colon. *Iléon* = Ileum. *Côlon ascendant* = Ascending colon.



FIG 148.—CONGENITAL MESO-COLON COMPLETE COLECTOMY

Liberation of the splenic flexure. The abdominal retractor pulls to the left, which is here easy owing to the flaccid abdominal wall. The right hand holding a compress on forceps, mobilises the splenic loop. This procedure often stops bleeding of the phreno-splenic ligament hæmostasis is often necessary after division with the knife or with the scissors.

Cœcum = Cæcum. *Cōlon transverse* = Transverse colon. *Cōlon ascendant* = Ascending colon. *Cōlon transverse* = Transverse colon. *Méso-cōlon* = Meso-colon. *Angle splénique* = Splenic flexure *Cōlon descendant* = Descending colon



Fig 149.—Congenital Mega-colon Complete Colectomy

Division of the phrenico-colic ligament When retraction by the compress is not sufficient to make this ligament mobile, it is necessary to divide it with scissors, but then an arteriole may give way Apply the forceps before cutting

Cœcum = Cæcum *Côlon transverse* = Transverse colon. *Côlon ascendant* = Ascending colon. *Le ligament phréno-colique gauche est pincé et coupé* = The phrenico-colic ligament is caught and cut.



FIG. 150.—CONGENITAL MEGA-COLON. COMPLETE COLECTOMY

Liberation of the colon is completed. The end of the large intestine is not distended. The congenital dilatation stops at the second half of the descending colon: the resection should still be made in the middle of the sigmoid to facilitate anastomosis with the ileum.

Section du côlon sigmoïde au thermo=Division of the sigmoid colon with the thermo-cautery. *Iléon*=Ileum. *Cæcum*=Cæcum. *Iléon à anastomoser avec le côlon sigmoïde*=Ileum to be anastomosed with the sigmoid colon. *Côlon transverse*=Transverse colon.

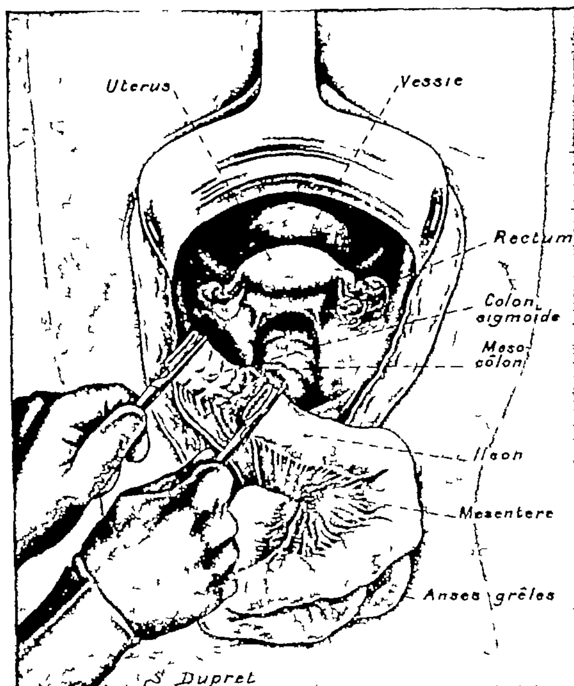


FIG. 151.—CONGENITAL MEGA-COLON. COMPLETE COLECTOMY

Resection is finished. The end to-end anastomosis has still to be performed. The operator brings into contact the two Kocher's forceps. The edges of the mesentery and of the meso-sigmoid are easily apposed.

Utérus=Uterus. *Vessie*=Bladder. *Rectum*=Rectum. *Côlon sigmoïde*=Sigmoid colon. *Méso-côlon*=Meso-colon. *Iléon*=Ileum. *Mésentère*=Mesentery. *Anses grêles*=Loops of small intestine.

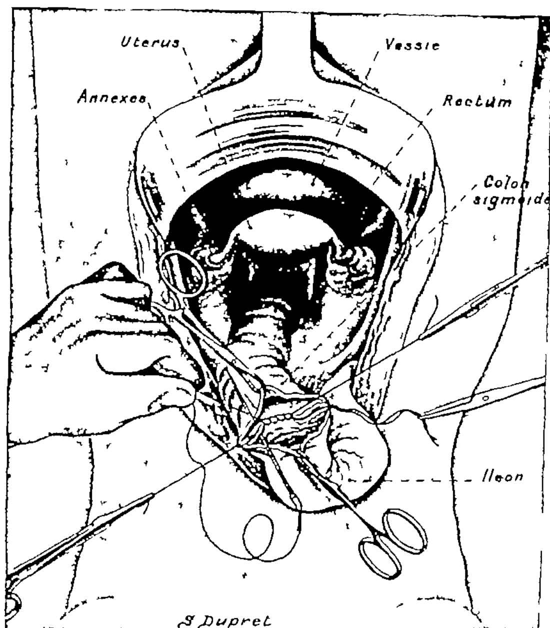


FIG 152.—CONGENITAL MEGA COLON COMPLETE COLECTOMY

How the tissues are fixed in order to make an end to-end ileo-sigmoidal anastomosis. A first stitch has been placed in the middle, at the mesenteric insertion of the two intestines; two others are placed at the two ends of the apposition. The operator begins by a buttonhole suture on the posterior edge two Chaput s forceps are placed in the middle of the free borders, opposite the mesenteric threads in the middle of the posterior suture

Utérus=Uterus. *Vessie*=Bladder *Annexes*=Adnexa. *Rectum*=Rectum. *Côlon sigmoïde*=Sigmoid colon. *Iléon*=Ileum.

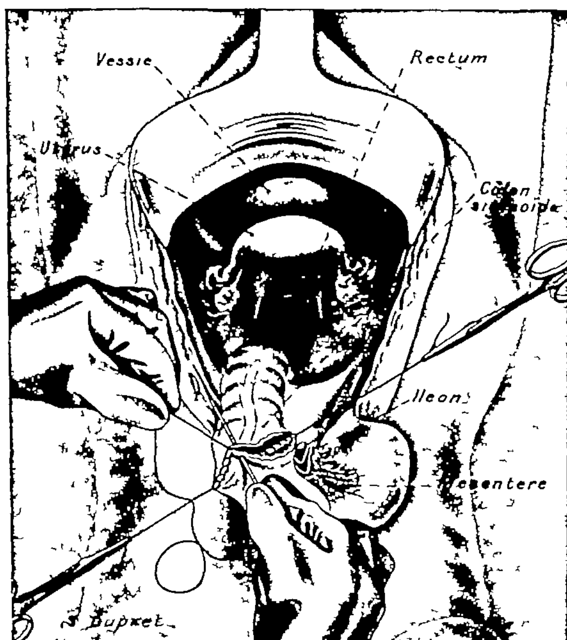


FIG 153.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Terminal ileo-colic anastomosis. The ileum is anastomosed end to-end with the sigmoid in the middle. The two fixation stitches have fixed the tissues. Here a through and through linen continuous suture is applied.

Vessie = Bladder. *Rectum* = Rectum. *Utérus* = Uterus. *Côlon sigmoïde* = Sigmoid colon. *Iléon* = Ileum *Mésentère* = Mesentery

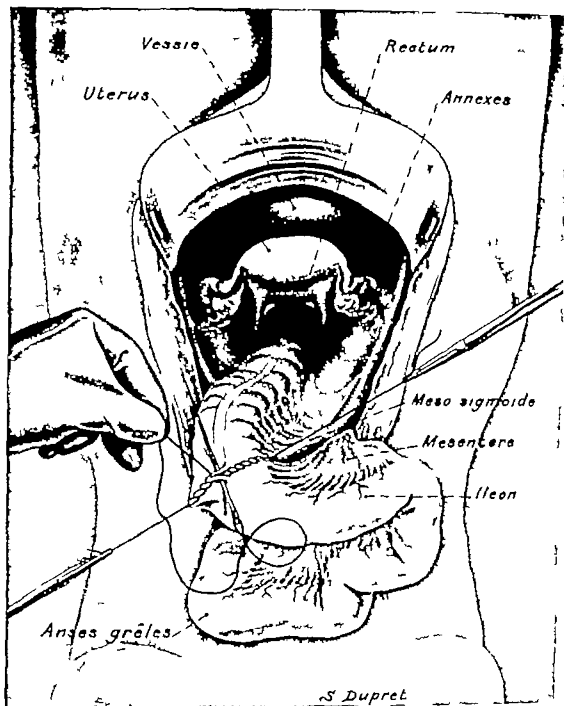


FIG 161.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Sero-serous continuous suture Two threads placed at the ends fix the tissues and stretch the line of the linen suture. One of the threads is applied to the mesenterio and the other to the free border of the intestine

Vessie = Bladder *Rectum* = Rectum *Utérus* = Uterus. *Annexes* = Adnexa. *Méso-sigmoïde* = Meso sigmoid. *Mésentère* = Mesentery *Iléon* = Ileum. *Anses grêles* = Loops of small intestine.

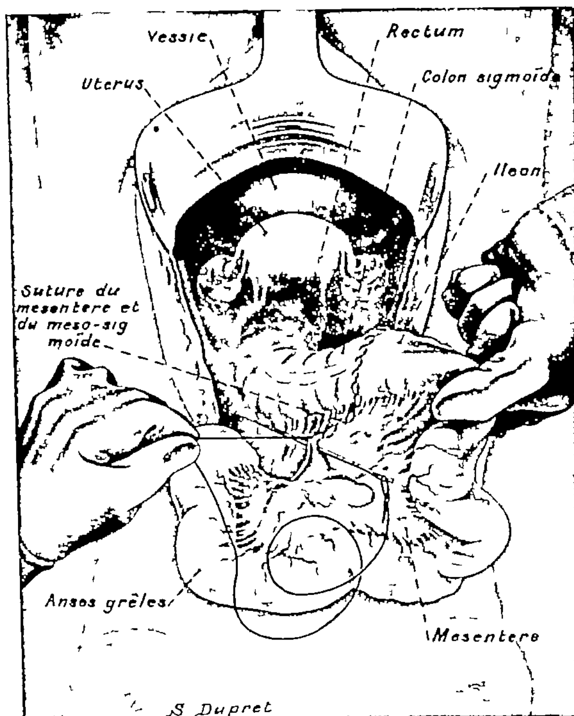


FIG 155.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

Suture of the meso-colon. It is absolutely necessary to close the mesenteric opening otherwise the intestinal loops may be strangulated by it.

Vessie = Bladder *Rectum* = Rectum. *Utérus* = Uterus. *Côlon sigmoïde* = Sigmoid colon. *Iléon* = Ileum. *Suture du mésentère et du méso-sigmoïde* = Suture of the mesentery and of the mesosigmoid. *Anses grêles* = Loops of small intestine. *Mésentère* = Mesentery



FIG. 156.—CONGENITAL MEGA-COLON COMPLETE COLECTOMY

The introduction of Faucher's tube is necessary to allow the immediate evacuation of flatus; without this precaution, the patient suffers from colic or sub-occlusion, necessitating the formation of an enterostomy To insert this tube, it is necessary to inject oil during its introduction, which if "dry" would be dangerous to the suture

Utérus=Uterus. *Rectum*=Rectum. *Côlon sigmoïde*=Sigmoid colon. *Anses grêles*=Loops of small intestine *Iléo-sigmoïdostomie*=Ileo-sigmoidostomy *Iléon*=Ileum. *Mésentère*=Mesentery *Relief du tube de Faucher*=Outline of Faucher's tube

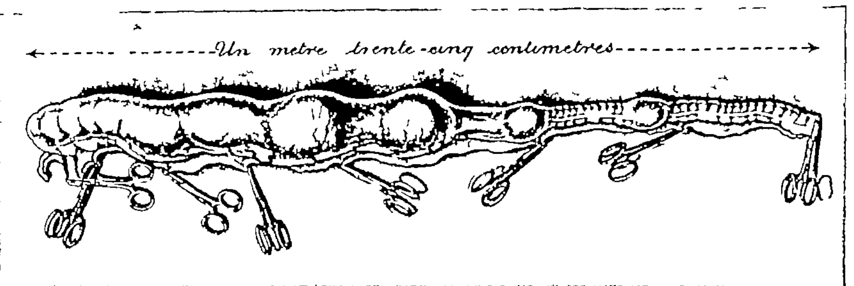


FIG 157.—ANATOMICAL PIECE OF AN INTESTINE RESECTED FOR MEGA COLON

The last swelling corresponds to the middle of the descending colon: the last but one to the splenic flexure. The reader will easily see the normal from the pathological part of the intestine. This colon should have been cut close to the last swelling but the ileo-sigmoidal anastomosis would have been more difficult. The piece retracted on itself after the operation gives an imperfect idea of the lesions noted during the operation.

Un mètre trente-cinq centimètres—One metre thirty five centimetres.

XI

CANCER OF THE RECTUM (CONCLUSION)

(*For the beginning see Fasc. I*)

THE following questions are often asked regarding cancer of the rectum

Can it be cured surgically? Is the cure longer than in the majority of cases of cancer?

Can and ought the normal anus to be preserved?

Should the operation be in one or in two stages?

Does the iliac anus allow of regular evacuation, not constituting a painful infirmity?

Is radium indicated in the inoperable cases? Should it be used in operable cases? Is its action as beneficial as in uterine cancer?

What are the respective indications of an extensive perineal amputation and of abdomino-perineal amputation?

1 Necessity for an Early Diagnosis and an Immediate Decision.

Rectal cancer is a good cancer, which after large excision of the intestine of the cellular tissue, of the meso-rectum, and of the glands, can give radical or prolonged cures

The prognosis depends to begin with on the first doctor consulted, he should never carelessly make the diagnosis of "hæmorrhoids" or "enteritis" without having systematically made a digital, and if this be negative then a rectoscopic examination Directly the diagnosis is made, the doctor will have the necessary credentials to make the patient resign himself to operation as soon as possible On this point he ought to make the patient understand the seriousness of the disease for extirpation of rectal cancer is one of the operations to which it is most difficult to make the patient submit immediately

The repugnance of the patient depends on two reasons (*a*) the prognosis from operation of removal of a rectal cancer is considered serious, (*b*) the possibility of an artificial anus is an object of terror for nearly every human being On this last point, the doctor ought

to explain that an abdominal anus well made and acting well is a mild infirmity Lastly, and above all, the patient should know at once, if not the absolute truth, which might completely upset him, at least the seriousness of his condition and the consequences of his refusal to submit to operation How can a patient resign himself at once to a mutilating and a serious operation and to an infirmity he believes painful, if he does not know he must choose between this outlook and certain death? Moreover, this decision is necessary, for it is a guarantee of cure or of a long survival. Rectal cancer is one of the best cancers which exist from a surgical point of view Extensive removal, rendered easy by the anatomy of the region, allows of systematic removal of the cellular tissue and of the glands We shall return to this question some pages later

2 Can Cancer of the Rectum be Cured?

We have recently had a case which has recurred after seventeen years, we have cured some cases seven, nine, and eleven years, and we consider our last operations will give still longer survivals, because the operation has been better and more extensively performed The good future prognosis depends on the relative innocency of rectal cancer, which rarely becomes generalised and grows slowly

3 What Treatment can we Employ against Rectal Cancer?

Three forms of treatment exist

(*a*) Abdomino-perineal removal, in one or two stages, in one stage it should be reserved for very good cases—*i e.*, to resistant, non debilitated subjects with only a slightly adherent tumour

(*b*) Extensive perineal extirpation, in two stages includes first the creation of an iliac anus, then perineal extirpation of the intestine, of the anus and of the perineal cellular tissue, this operation is nearly as large as the abdomino-perineal, save, however, the removal of the superior glands and of a part of the ileo-sigmoidal meso-colon which cannot be removed But tumours removed widely by this low route yet give excellent results and very long survival

(*c*) Curietherapy is directed against inoperable cases treated by an iliac anus as continent as possible and by the *application* of radium Radium does not give in these cases the results which it procures in uterine cancer yet it should be employed in all inoperable cases, either by needles or by tubes. We have been able

to obtain, even in cases where the outlook was bad, some interesting results

We do not think radium can at the present time be substituted for surgical treatment, but in all inoperable cases it should be employed If there be numerous failures there exist also very comforting cases, which allow us to employ it systematically each time surgery has become powerless

4 What is the Proportion of Inoperable Cases ?

Cases are declared inoperable or operable (*a*) according to the physical and moral condition of the patient, (*b*) according to the form of the cancer, (c) and its site, which may cause no pain and be unknown, or be painful, or cicatrising, (*d*) according to the early stage of the diagnosis, and lastly (*e*) according to the experience of the operator

Some surgeons declare that four fifths of rectal cancers are inoperable, whereas for other cancers it is barely one-fifth A difficult case does not mean an inoperable case, adherent growths, where removal is laborious, must not be considered as inoperable, without doubt they bear a greater risk, but this risk ought to be accepted if there still be great chances of cure or of long survival. The favourable cases give 5 to 10 per cent. of deaths after operation, unfavourable cases (aged, exhausted people, cases with adhesions) 60 per cent., but it is better to have a 40 per cent chance of cure than certain death

5 Ought Radium to be Employed in all Operable Cases ? Does it give any Results in Inoperable Cases ?

Radium ought to be if possible, employed in operable cases a month before operation, it arouses a process of defence around the growth and produces relative asepsis of the ulcerated surface. We consider it ought to be employed in all cases In order to operate afterwards do not wait too long after the application, because the adhesions become organised and make the operation more and more difficult although possible

In inoperable cases radium can be used and gives sometimes unhoped for survivals. Radium must not however, be recommended to the exclusion of everything else for cases still operable, for its action is not as beneficial as in uterine cancer, in uterine cancer the benefit of radium is so marked that for some surgeons,

the question of radium treatment only, is settled even in operable cases In rectal cancer it is not the same, for the future operative results are excellent, even in border line cases

6 Objections Raised against the Proposals for Removal of the Rectum.

(1) The seriousness of the operation, (2) the persistence of an abdominal anus

(1) Abdomino-perineal extirpation is certainly a serious operation which, according to the operator and the case gives a mortality of 10 to 60 per cent , but this mortality is much reduced (*a*) if the *surgeon reserve this operation for strong subjects, not too old*, and for cases with few adhesions, (*b*) if it be performed in two stages in doubtful cases, and if spinal anæsthesia be employed instead of narcosis, and (*c*) if the surgeon be skilled in the operation.

We saw Miles in January, 1920, at the London Cancer Hospital, he employed chloroform or ether as an anæsthetic, his mortality reached 50 per cent. He has not, since this time, changed his technique, but he has replaced chloroform or ether by spinal anæsthesia, completed or not by nitrous monoxide, he writes me lately his mortality has fallen to 10 per cent The question of anæsthesia is, then, very important

This seriousness of the abdomino-perineal operation has made some authorities prefer the enlarged perineal method in all cases, we recognise it is an excellent operation, and is to be employed in a number of cases, in feeble subjects but it guarantees less certainly radical cure, since it leaves in the abdomen some glands and a band of suspicious peritoneum, which is better removed

(2) *An abdominal anus is a repugnant infirmity* *In the past* the majority of surgeons did not operate on rectal cancers, they waited patiently up to the extreme limits of contraction and made an abdominal anus, to avoid pain and intestinal obstruction This anus was made in such a way that it was incontinent, large and prolapsed the patient was constantly soiled, smelt badly, and became an object of repugnance to himself and his relations We can conceive the operator impressed by such memories did every thing to avoid this infirmity, but this idea of an abdominal anus does not tally with the reality The fact of making an anus across the muscle and terminal the fact of twisting it, and then patiently re-educating the subject, remove the great part of the inconveniences

of an artificial anus The majority of those operated upon have an injection on waking, empty their colon, and cease to trouble about their intestine for the rest of the day They thus accustom themselves to empty their intestine by rule, and have freedom from all fæcal evacuation during the day We know a certain number of patients who have been operated upon, who wear no apparatus, some even have no bandage, and wear their shirt directly against the anus, but this, however, is uncleanly A very great number of them go to the w c once or twice a day, at a fixed hour, and are in no way troubled by their infirmity It is necessary, then, that this prejudice against an artificial anus be combated, it must be so, if cure is to be obtained Besides, it is advantageous to make patients resign themselves to this inconvenience. Moreover, is it compulsory to tell them at the beginning, the iliac anus will be permanent ? It is a question of tact, of the circumstances of the case, it is not possible to be precise on this subject. A great number of patients, terrified at the thought of this repugnant anus, make it a *sine qua non* that the anus will be removed afterwards, and if the answer be in the negative, do not allow the operation to be performed But they do not permit the operation, because they do not know the truth, which they ask of us and we hide from them. As a result of our falsehood, dictated by sentiment, they die in order to avoid an infirmity which they always end in accepting at a time when radical cure is no longer possible.

If the patient be sensitive, the surgeon ought to make known to a member of the family the exact diagnosis the fatal prognosis, and the advantage of a permanent anus Then he can, perhaps, hide from the patient the existence of the cancer and the necessity of the permanent abdominal anus

If, moreover, it were possible for us to tell the patient the truth he asks for, and to which he has perhaps the right, how ought we to express ourselves ? Thus

"Sir, you have cancer of the rectum, if you do not submit to operation the disease will undergo stenosis will poison you, and bleed, certainly fatal after a year s torture, a time will come when complete obstruction will occur and when it will be necessary for you to have an artificial anus in spite of this anus, you will have discharges, very severe pain, and your end will be a veritable martyrdom. Suppose afterwards in accordance with your wish, we removed the rectal cancer, with the promise of leaving you your natural anus the following would come to pass

by chronic stercoræmia, the fact of removing the fæcal matters at a first stage improves the general state At the time of the second stage, the surgeon excises the lower opening of the double anus, which is removed with the ano-recto-colic end, this stage prolongs the operation by five minutes We perform it in half of the cases

Out of six operable cases we perform

1 Abdomino perineal amputation in one stage.
2 Perineal amputation in two stages
3 Abdomino-perineal in two stages

9 What Method of Anæsthesia should be Employed ?*

For the abdominal anus local anæsthesia

For amputation of an enlarged perineum sacral or epidural anæsthesia

For abdomino-perineal amputation spinal anæsthesia.

10 Conclusions

Each time a patient complains of some trouble with defæcation, a hæmorrhagic, mucous discharge a burning sensation constipation, uneasiness, etc , the doctor should never pronounce the words "hæmorrhoids" or ' enteritis ' before making a digital examina tion, and if that be negative using the rectoscope.

From the time that rectal cancer is recognised, the doctor should obtain knowledge of all the scientific conditions and family circum stances, favourable for an immediate decision as regards operation.

Every rectal cancer diagnosed should be operated upon, the best operation is abdomino-perineal removal in one stage, but it should only be carried out in patients not constitutionally feeble, with sufficient resisting powers, and if the tumour be only slightly or not at all adherent. In all other cases extirpation with an enlarged perineum, or by the abdomino-perineal route in two stages should be performed. The former is less serious than the abdomino-perineal but does not give so many chances of permanent cure

In the minority of cases in which the cancer is circumscribed in all cases of cancer situated high up, with few symptoms of poison ing, and with a tendency to sclerous change the sphincter ani should be preserved, but in the majority of cases—i e, in those of the ampulla, or situated low down, or in the fungoid form—it is better

* "Anæsthésie Régionale by Victor Pauchet, Sourdat and Labat (Doin, Paris, 1920)

to perform high recto-sigmoid extirpation, which comprises removal of the ischio-rectal tissues, of the levatores ani, of the cellular tissue of the pelvis, of the glandular and mesenteric chains The fact of keeping the natural anus doubles the chances of operative mortality, multiplies the chances of recurrence, and does not give an absolute guarantee of a continent perineal anus

The abdominal artificial anus, well made and acting well, forms a passable infirmity

Every patient with rectal cancer ought to be informed, if not of the absolute at least of sufficient, truth regarding the diagnosis and prognosis, in order to make knowingly the most advantageous decision It is probable that if every patient knew the absolute truth, if he were acquainted with the prognosis he would resign himself at once to operation, even if the operative mortality were on an average 15 per cent., and the artificial anus were permanent.

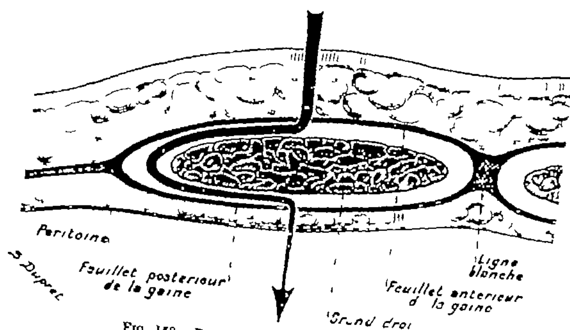


FIG. 158 —RECTAL CANCER. ABDOMINAL ANUS.

Incision of the abdominal wall The knife follows the direction of the arrow Incision of the skin and of the sheath of the aponeurosis in the middle of the rectus. This is pulled aside Division of the posterior layer of the sheath and of the peritoneum.

Péritoine = Peritoneum. *Ligne blanche* = Linea alba. *Feuillet postérieur de la gaine* = Posterior layer of the sheath. *Feuillet antérieur de la gaine* = Anterior layer of the sheath *Grand droit* = Rectus.

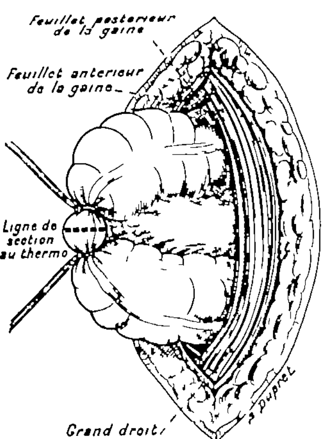


FIG 159.—RECTAL CANCER. ABDOMINAL ANUS.

The colo-sigmoid loop freed and mobilised by separation of the colon from the abdominal wall is brought outside the abdomen, ligatured and divided by the thermo-cautery The division is prolonged on to the mesentery

Feuillet postérieur de la gaine=Posterior layer of the sheath. *Feuillet antérieur de la gaine*=Anterior layer of the sheath *Ligne de section au thermo*=Line of section by the thermo-cautery *Grand droit*=Rectus.

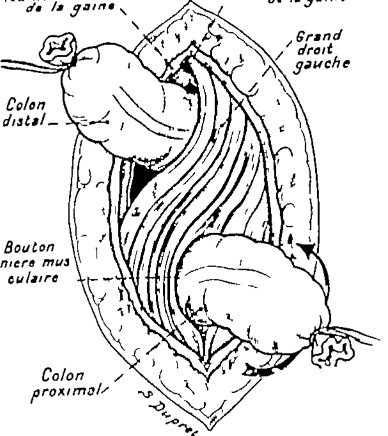


FIG 160 —RECTAL CANCER. ABDOMINAL ANUS.

Direction of the two ends of the colon The rectal end is brought into the lower angle of the wound outside the muscle: this end need not be continent. The upper end is brought into an opening in the rectus muscle: it is half twisted to ensure continence (The reader will remember the middle line is on the right.)

Feuillet antérieur de la gaine=Anterior layer of the sheath. *Feuillet postérieur de la gaine*=Posterior layer of the sheath *Côlon distal*=Distal colon. *Grand droit gauche*=Left rectus. *Boutonnière musculaire*=Opening in the muscle. *Côlon proximal*=Proximal colon.

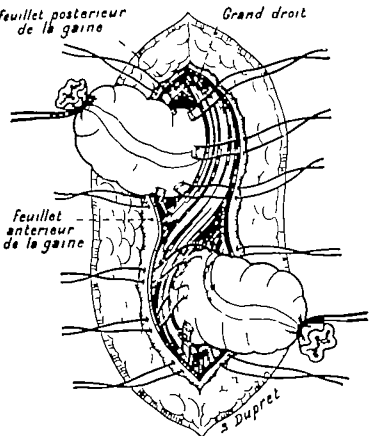


FIG. 161.—RECTAL CANCER. ABDOMINAL ANUS.

Fixation of the two ends of the colon. Half twist of the upper end of the colon.

Feuillet postérieur de la gaine=Posterior layer of the sheath. *Grand droit*=Rectus. *Feuillet antérieur de la gaine*=Anterior layer of the sheath.

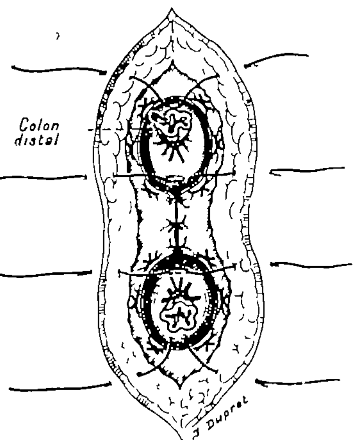


FIG. 162.—RECTAL CANCER. ABDOMINAL ANUS.

Restoration of the abdominal wall.

Côlon distal=Distal colon.

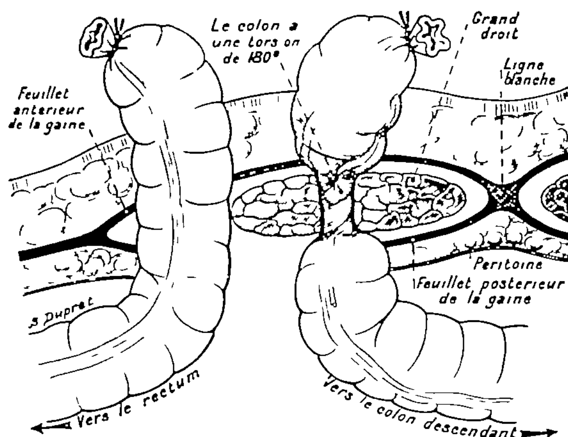


FIG 163.—RECTAL CANCER. ABDOMINAL ANUS.

Diagrammatic section of the abdomen, showing the respective position of the two loops. Half twist of the upper end of the colon where it crosses the rectus abdominis (continence).

Feuillet antérieur de la gaine=Anterior layer of the sheath *Le côlon a une torsion de* 180°=Colon twisted to 180 *Grand droit*=Rectus. *Ligne blanche*=Linea alba. *Péritoine*=Peritoneum. *Feuillet postérieur de la gaine*=Posterior layer of the sheath. *Vers le rectum*=To the rectum. *Vers le côlon descendant*=To the descending colon.

CANCER OF THE RECTUM

Abdomino perineal Amputation

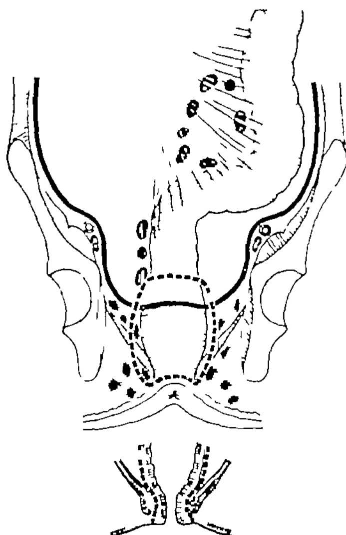


FIG 164.—CANCER OF THE RECTUM. ECONOMICAL ABDOMINO-PERINEAL AMPUTATION (MILES.)

The upper figure shows removal of the meso-sigmoid and meso-rectal glands. It removes the anus, but leaves the levatores ani and a part of the ischio-rectal tissue, sites of recurrence.

In the lower figure the same operation, but with preservation of the normal anus and lowering of the upper end of the intestine. The levatores ani and the sphincter are preserved, but the chances of recurrence are greater

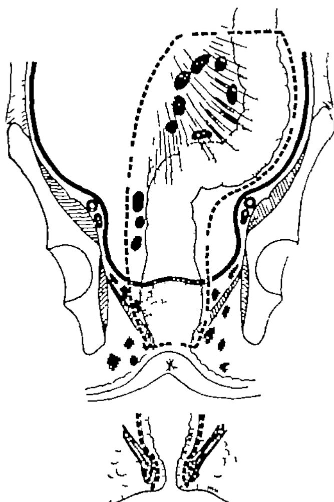


Fig 165.—Cancer of the Rectum. Economical Perineal Amputation (Miles.)

This figure shows a frontal section of the pelvis, of the rectum, and of the sigmoid. From above downwards, the operator sees the glands of the meso-sigmoid, then the glands of the meso-rectum. Below the double line, indicating the peritoneum, the spots in grey mark the recurrent nodules on the upper surface of the levatores ani and in the ischio-rectal fossa. The dotted line indicates the part of the rectum which is removed by an economical resection. The lower part of the levatores ani and the anus are removed. The reader can see the insufficiency of this operation, since it leaves intact the glands of the meso-rectum and of the meso-sigmoid, as also the muscular tissue of the levatores ani and the ischio-rectal tissue, frequent sites of recurrence.

In the lower figure, the dotted line shows the direction of the exeresis, when it is desired, with the economic resection by the perineal route, to spare the sphincter and the levator ani.

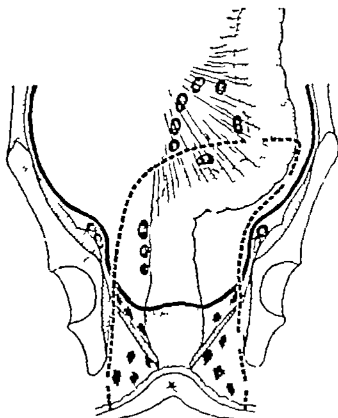


FIG 166.—CANCER OF THE RECTUM. AMPUTATION BY AN ENLARGED PERINÆUM.

This certainly very radical operation removes the whole of the ischio-rectal cellular tissue the two levatores, the cellular tissue of the pelvis, the meso-rectal glands, and a part of the meso-sigmoidal glands. It leaves some glands of the meso-sigmoid

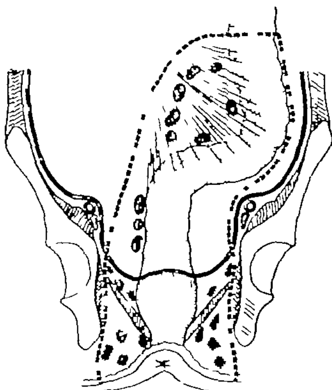


FIG. 167.—CANCER OF THE RECTUM. AMPUTATION BY AN ENLARGED PERINÆUM.

This operation removes the meso-sigmoidal and sacral glands, the whole of the cellular tissue of the pelvis and of the ischio-rectal fossæ, and the two levatores and the amputation extends to the pelvic walls. This is the most extensive, most certain, and most radical operation.

CANCER OF THE RECTUM IN THE MALE

Abdomino perineal Amputation

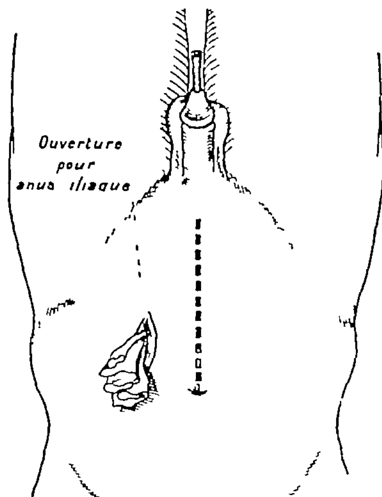


FIG 168.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Buttonhole incision across the muscle for the abdominal anus. The dotted line corresponds to the median incision. The catheter fixed in is for the perineal stage

Ouverture pour anus iliaque=Opening for iliac anus.

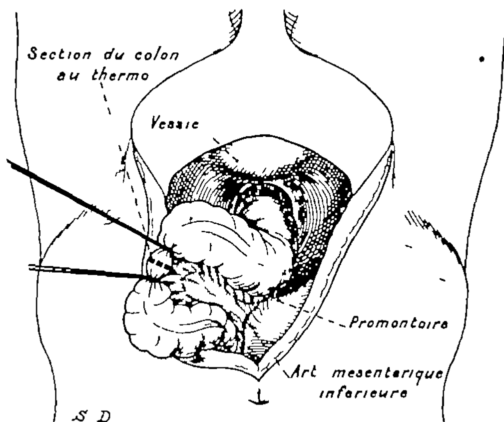


FIG 169.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

The abdomen is opened, and the exploration completed; the operator performs left colo-parietal separation in order to mobilise to the greatest extent the descending colon and the sigmoid loop the termination of the inferior mesenteric artery and its branches are marked out. The ligature is applied at the most favourable spot for making a freely movable upper end of the colon, easy to draw into the abdominal wound. The division of the intestine is made by the thermo-cautery that of the meso-colon by scissors. It is prolonged as far as the inferior mesenteric artery

Section du côlon au thermo—Division of the colon by the thermo-cautery *Vessie*—Bladder *Promontoire*—Promontory of the sacrum. *Art mésentérique inférieure*—Inferior mesenteric artery

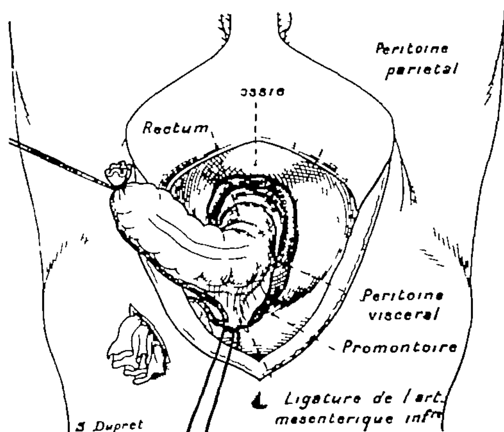


FIG 170 —CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Liberation of the lower intestinal segment. The visceral layer of the peritoneum is divided about 2 centimetres from the intestine. Ligature of the inferior mesenteric artery

Péritoine pariétal = Parietal peritoneum. *Rectum* = Rectum. *Vessie* = Bladder. *Péritoine viscéral* = Visceral peritoneum. *Promontoire* = Promontory of the sacrum. *Ligature de l'art. mésentérique infre.* = Ligature of the inferior mesenteric artery

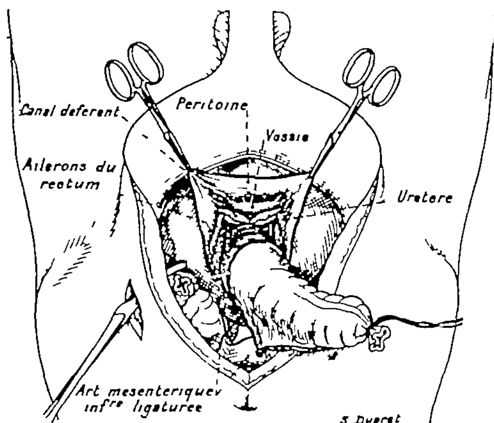
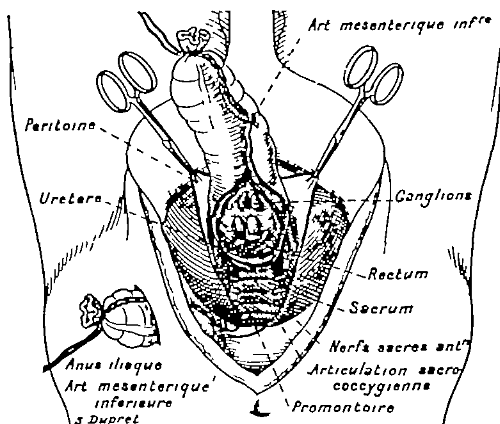


FIG. 171.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

The upper stump of the colon is brought into the abdominal buttonhole incision. The intestinal segment is freed from its adjoining attachments. Note the ureter the bladder the vesiculæ seminales, and the ligaments of the rectum the latter ought to be divided as far as the levatores ani.

Canal déférent=Vas deferens. *Péritoine*=Peritoneum. *Vessie*=Bladder *Ailerons du rectum*=Ligaments of the rectum. *Uretère*=Ureter *Art mésentérique infre. ligaturée* =Inferior mesenteric artery ligatured.



[FIG. 172.—CANCER OF THE RECTUM. ABDOMINO-PERINEAL REMOVAL.

Liberation of the recto-sigmoidal segment in the hollow of the sacrum. It ought to be extended as far as the coccyx.

Art. mésentérique infre.=Inferior mesenteric artery. *Péritoine*=Peritoneum. *Uretère*=Ureter. *Ganglions*=Glands. *Rectum*=Rectum. *Sacrum*=Sacrum. *Nerfs sacrés antrs.*=Anterior sacral nerves. *Anus iliaque*=Iliac anus. *Articulation sacro-coccygienne*=Sacro-coccygeal joint. *Art. mésentérique inférieure*=Inferior mesenteric artery. *Promontoire*=Promontory of the sacrum.

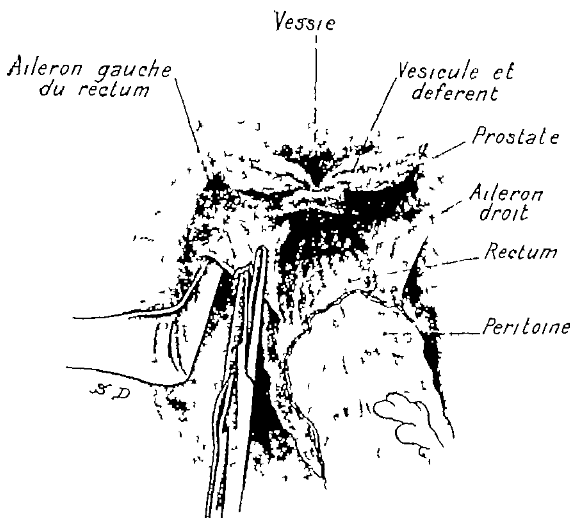


FIG 173.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Division of the ligaments of the rectum. (Important stage.) They enclose the middle hæmorrhoidal artery which does not bleed. The division descends to the levatores ani which form the floor of the pelvis.

Vessie=Bladder. *Aileron gauche du rectum*=Left ligament of the rectum. *Vésicule et déférent*=Vesicula seminalis and vas deferens. *Prostate*=Prostate. *Aileron droit*=Right ligament of the rectum. *Rectum*=Rectum. *Péritoine*=Peritoneum.

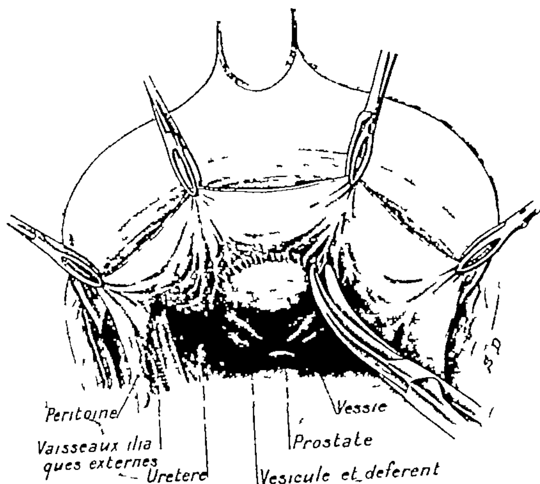


FIG 174.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Liberation of the vesical peritoneum. It provides material for partitioning the pelvis. The vesical peritoneum is stretched by four tissue forceps.

Péritoine=Peritoneum. *Vessie*=Bladder. *Vaisseaux iliaques externes*=External iliac vessels. *Prostate*=Prostate. *Uretère*=Ureter. *Vésicule et déférent*=Vesicula seminalis and vas deferens.

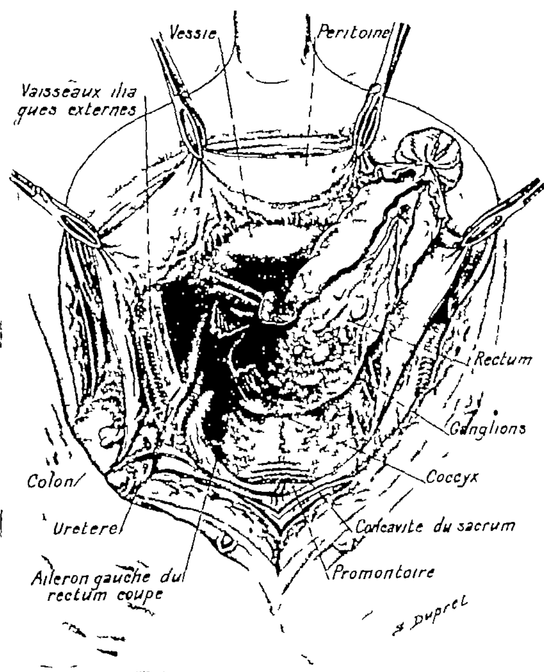


Fig. 175.—Cancer of the Rectum in the Male. Abdomino-perineal Removal.

Finish of the detachment of the rectum. The rectum brings with it all the cellular tissue of the pelvis the two ligaments are cut. The recto-colic segment will be buried under the pelvic and vesical peritoneum.

Vessie = Bladder *Péritoine* = Peritoneum. *Vaisseaux iliaques externes* = External iliac vessels. *Rectum* = Rectum. *Ganglions* = Glands. *Côlon* = Colon. *Coccyx* = Coccyx. *Uretère* = Ureter *Concavité du sacrum* = Hollow of the sacrum. *Aileron gauche du rectum, coupé* = Left ligament of the rectum, cut. *Promontoire* = Promontory of the sacrum.

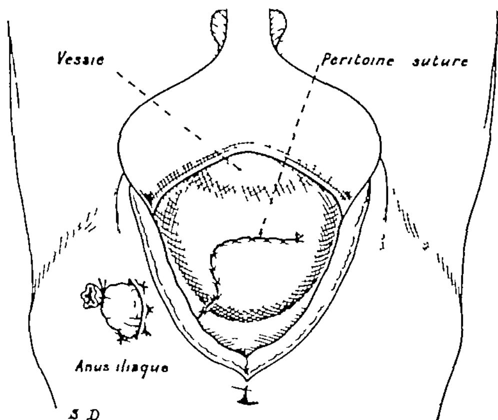


FIG. 176 —CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.
The end of the colon has been pressed against the pelvic floor and then buried under the peritoneal covering.

Vessie—Bladder *Péritoine suturé*—Peritoneum sutured. *Anus iliaque*—Iliac anus.

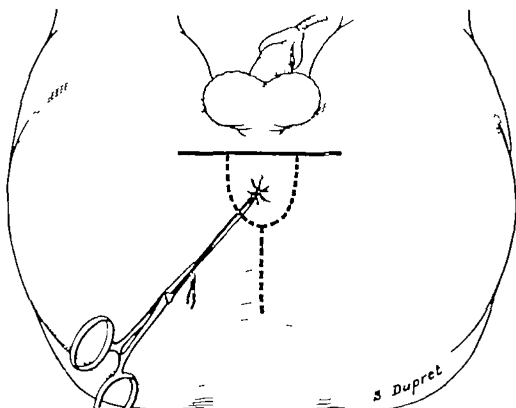


FIG 177 —CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL. PERINEAL STAGE.

Outline of the incision. The transverse line is that for perineal prostatectomy the vertical reaches the sacro-coccygeal joint. The semicircular incision is carried out about 2 centimetres from the anus, already sutured by silkworm gut.

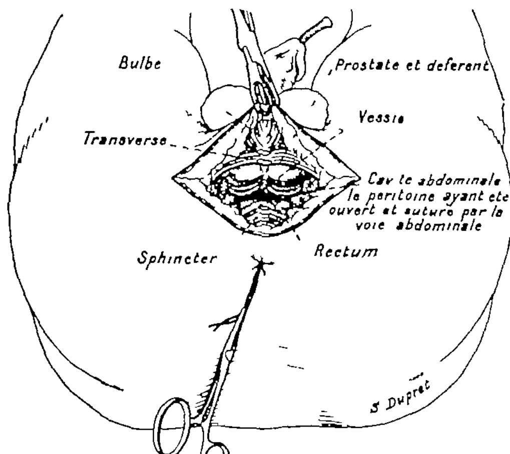


FIG 178.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL. PERINEAL STAGE.

This stage is the same as that of perineal prostatectomy Separation of the bulb, and of the prostate, and of the vesiculæ seminales. The operator's finger finds Douglas pouch, already opened through the abdomen. If the cancer adhere to the prostate, or to the *vesiculæ seminales, the operator does not continue the dissection, and finishes the opera*tion from this side, after having freed the intestine from its lateral and posterior attachments.

Bulbe—Bulb. *Prostate et déférent*—Prostate and vas deferens. *Vessie*—Bladder *Transverse*—Transversalis perinæi *Cavité abdominale le péritoine ayant été ouvert et suturé par la voie abdominale*—Abdominal cavity the peritoneum having been opened and sutured by the abdominal route *Sphincter*—Sphincter *Rectum*—Rectum.

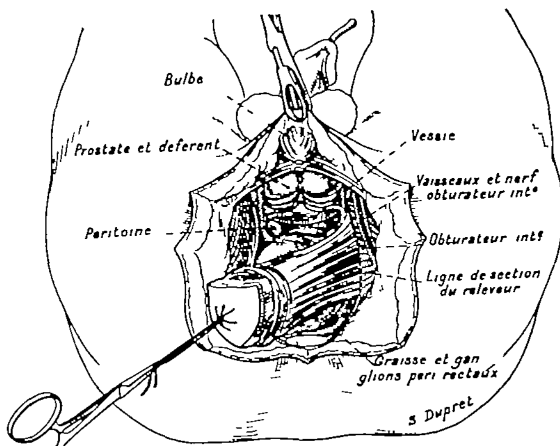


FIG. 179.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL. PERINEAL STAGE.

Division of the levatores ani. This is to be made at the insertion, and not in the body of the muscle, which must be removed completely

Bulbe—Bulb. *Prostate et déférent*—Prostate and vas deferens. *Vessie*—Bladder *Vaisseaux et nerf obturateur int.*—Internal obturator vessels and nerve. *Péritoine*—Peritoneum. *Obturateur int.*—Obturator internus. *Ligne de section du releveur*—Line of section of the levator ani. *Graisse et ganglions péri-rectaux*—Fat and peri rectal glands.

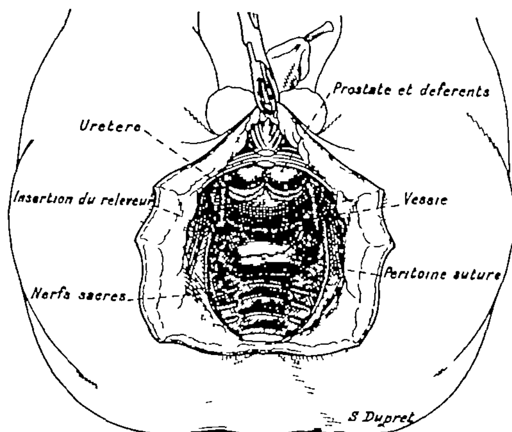


FIG 180 —CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Operation finished. Note behind the bladder the appearance of the peritoneum sutured from the abdomen, and receiving the pressure of the loops of the small intestine A Mickulicz drain supports this serous arch for eight days.

Uretère—Ureter. *Prostate et déférents*—Prostate and vasa deferentia. *Insertion du releveur*—Insertion of the levator ani. *Vessie*—Bladder *Nerfs sacrés*—Sacral nerves. *Péritoine suturé*—Peritoneum sutured.

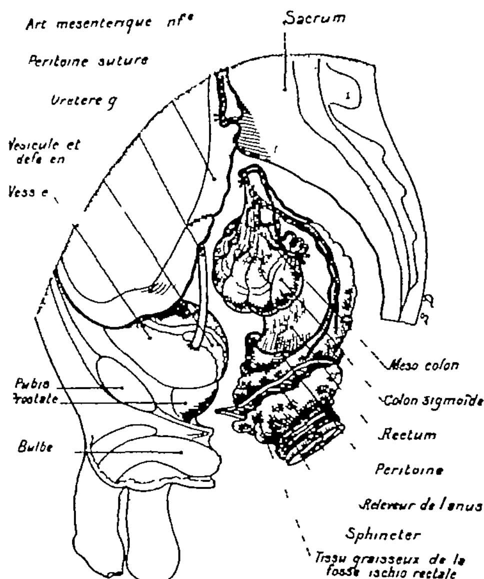


FIG. 181.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Section showing everything that should be removed.

Art. mésentérique infe.—Inferior mesenteric artery. *Sacrum*—Sacrum. *Péritoine suturé*—Peritoneum sutured. *Uretère g*—Left ureter. *Vésicule et déférent*—Vesicula seminalis and vas deferens. *Vessie*—Bladder. *Méso-côlon*—Meso-colon. *Pubis*—Pubis. *Prostate*—Prostate. *Côlon sigmoïde*—Sigmoid colon. *Rectum*—Rectum. *Bulbe*—Bulb. *Péritoine*—Peritoneum. *Releveur de l'anus*—Levator ani. *Sphincter*—Sphincter. *Tissu graisseux de la fosse ischio-rectale*—Fatty tissue of the ischio-rectal fossa.

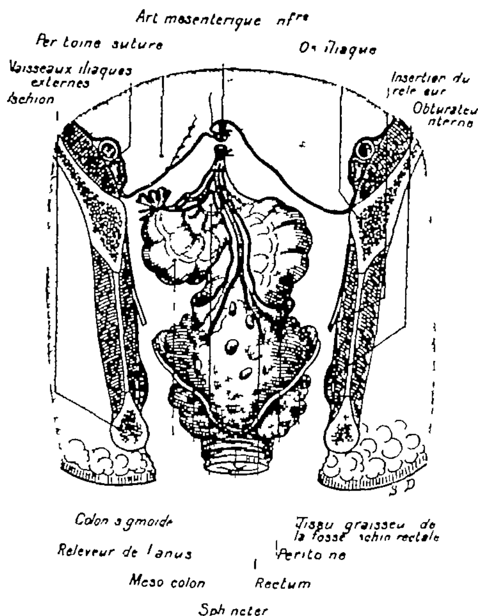


FIG 182.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Frontal section of the same: it is to be noted in this operation in the male, all the pelvic contents ought to be removed except the genito-urinary organs.

Art. mésentérique infre.—Inferior mesenteric artery *Péritoine suturé*—Sutured peritoneum. *Os iliaque*—Ileum. *Vaisseaux iliaques externes*—External iliac vessels. *Insertion du releveur*—Insertion of the levator ani. *Ischion*—Ischium. *Obturateur interne*—Obturator internus. *Côlon sigmoïde*—Sigmoid colon. *Tissu graisseux de la fosse ischio-rectale*—Fatty tissue of the ischio-rectal fossa. *Releveur de l'anus*—Levator ani. *Péritoine*—Peritoneum. *Méso-côlon.*—Meso-colon. *Rectum*—Rectum *Sphincter*—Sphincter.

CANCER OF THE RECTUM IN THE MALE

Extensive Perineal Extirpation

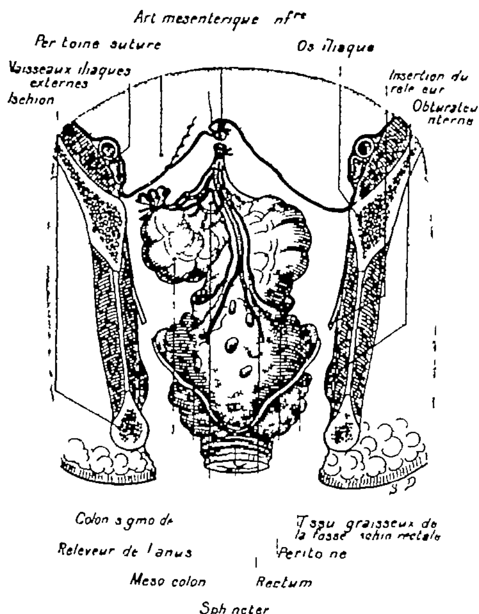


FIG. 183.—CANCER OF THE RECTUM IN THE MALE. ABDOMINO-PERINEAL REMOVAL.

Frontal section of the same: it is to be noted in this operation in the male, all the pelvic contents ought to be removed except the genito-urinary organs.

Art. mésentérique infre.—Inferior mesenteric artery. *Péritoine suturé*—Sutured peritoneum. *Os iliaque*—Ileum. *Vaisseaux iliaques externes*—External iliac vessels. *Insertion du releveur*—Insertion of the levator ani. *Ischion*—Ischium. *Obturateur interne*—Obturator internus. *Côlon sigmoïde*—Sigmoid colon. *Tissu graisseux de la fosse ischio-rectale*—Fatty tissue of the ischio-rectal fossa. *Releveur de l'anus*—Levator ani. *Péritoine*—Peritoneum. *Méso-côlon*—Meso-colon. *Rectum*—Rectum. *Sphincter*—Sphincter

CANCER OF THE RECTUM IN THE MALE

EXTENSIVE PERINEAL EXTIRPATION

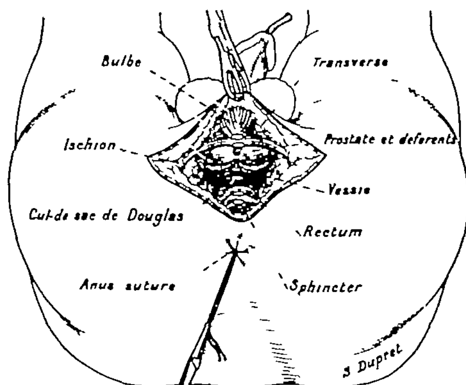


FIG 183.—CANCER OF THE RECTUM IN THE MALE. EXTENSIVE PERINEAL EXTIRPATION
For the cutaneous incision, see Fig 177 of Abdomino-perineal removal.

Retro-urethro-prostatic separation. This division is that of perineal prostatectomy The operator has separated in turn the bulb and the transversalis perinei muscle. He has penetrated into the detachable space of R. Proust and has exposed the prostate and the vesiculæ seminales. Note Douglas pouch is not opened, and will not now be opened. The anus is closed by silkworm gut.

Bulbe=Bulb. *Transverse*=Transverse muscle of the perinæum. *Ischion*=Ischium. *Prostate et déférents*=Prostate and vasa deferentia. *Vessie*=Bladder. *Cul-de-sac de Douglas*=Douglas' pouch. *Rectum*=Rectum. *Anus suturé*=Anus sutured. *Sphincter*=Sphincter

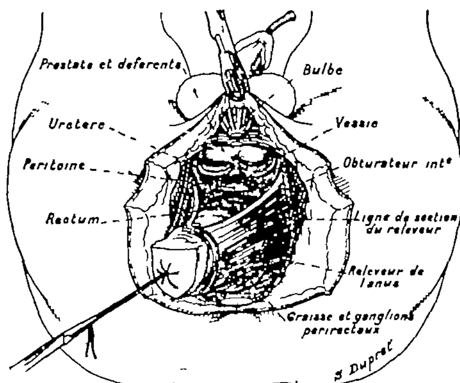


FIG 184.—CANCER OF THE RECTUM IN THE MALE. EXTENSIVE PERINEAL EXTIRPATION

The rectum has been freed on its posterior surface, as far as the sacral promontory so as to empty completely the hollow of the sacrum. The two levatores ani are exposed, the ischio-rectal fat having been excised or pushed back to the anus: here it is removed to show the levatores better which will be separated from their insertions along the dotted line close to the pelvis.

Prostate et déférents—Prostate and vasa deferentia. *Bulbe*—Bulb. *Uretère*—Ureter *Vessie*—Bladder *Péritoine*—Peritoneum. *Obturateur int.*—Obturator internus. *Rectum*—Rectum. *Ligne de section du releveur*—Line of division of the levator ani. *Releveur de l'anus*—Levator ani. *Graisse et ganglions périrectaux*—Peri rectal fat and glands.

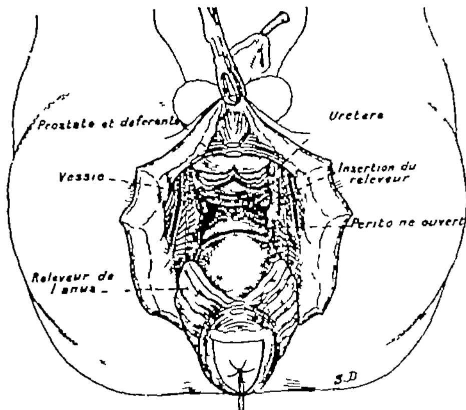


Fig. 185.—Cancer of the Rectum in the Male. Extensive Perineal Extirpation

Opening of Douglas' pouch, which allows the rectum to be brought down.

Prostate et déférents = Prostate and vasa deferentia. *Uretère* = Ureter *Vessie* = Bladder *Insertion du releveur* = Insertion of the levator ani. *Péritoine ouvert* = Peritoneum opened. *Releveur de l'anus* = Levator ani.

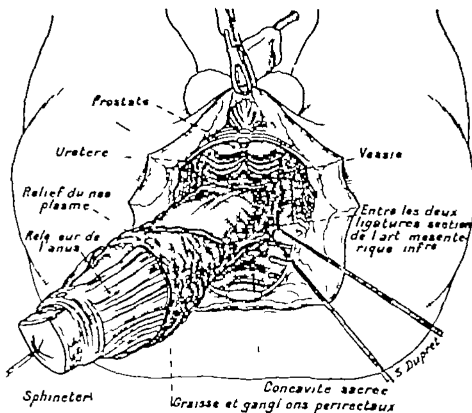


Fig. 186.—Cancer of the Rectum in the Male. Extensive Perineal Extirpation

Liberation of the mesenteric pedicle. The division of the artery is made between two ligatures.

Prostate = Prostate. *Uretère* = Ureter *Vessie* = Bladder *Relief du néoplasme* = Outline of the growth. *Entre les deux ligatures section de l'art mésentérique infre.* = Division of the inferior mesenteric artery between two ligatures. *Releveur de l'anus* = Levator ani. *Sphincter* = Sphincter. *Concavité sacrée* = Hollow of the sacrum. *Graisse et ganglions périrectaux* = Peri-rectal fat and glands.

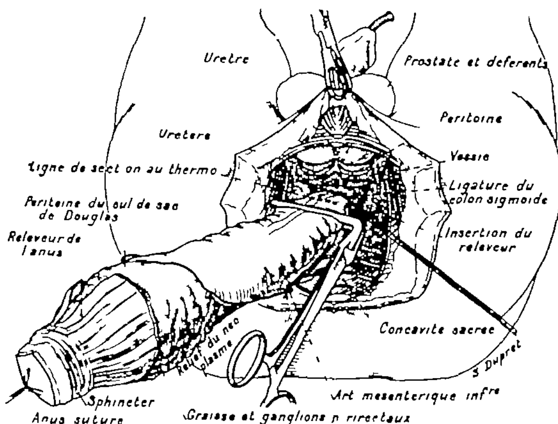


FIG 187 —CANCER OF THE RECTUM IN THE MALE. EXTENSIVE PERINEAL EXTIRPATION

The operator lowers as much of the intestine as possible he ties the upper end with strong thread, seizes the lower end, and divides it with the thermo-cautery at the dotted line (For burying the stump see Figs. 196 and 197)

Urètre = Urethra. *Prostate et déférents* = Prostate and vasa deferentia. *Uretère* = Ureter *Péritoine* = Peritoneum. *Vessie* = Bladder *Ligne de section au thermo* = Line of division by the thermo-cautery *Ligature du côlon sigmoïde* = Ligature of the sigmoid colon *Péritoine du cul-de-sac de Douglas* = Peritoneum of Douglas pouch. *Insertion du releveur* = Insertion of the levator ani *Releveur de l'anus* = Levator ani. *Concavité sacrée* = Hollow of the sacrum. *Sphincter* = Sphincter *Art mésentérique infre.* = Inferior mesenteric artery *Anus suturé* = Anus sutured. *Graisse et ganglions périrectaux* = Peri-rectal fat and glands. *Relief du néoplasme* = Outline of the growth.

CANCER OF THE RECTUM IN THE FEMALE

Extensive Perineal Extirpation

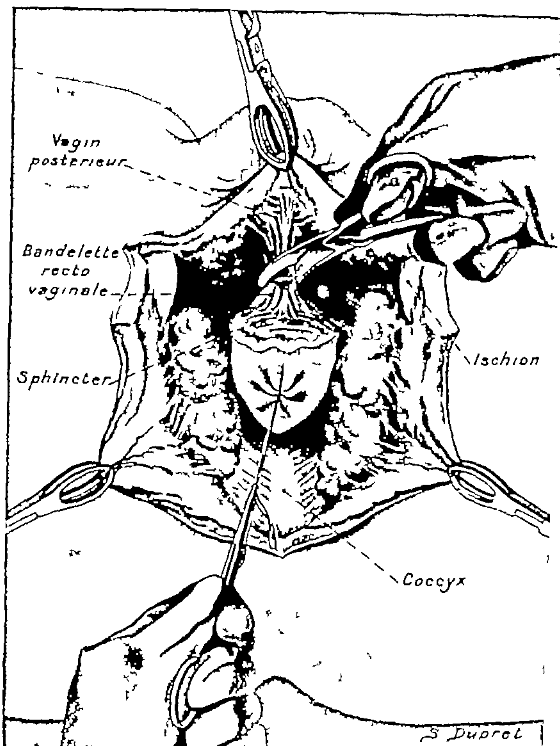


FIG 189.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

The coccyx has been exposed. The ischio-rectal fat is to be pushed back to the anus: only the subcutaneous tissue is to remain in contact with the flaps division of the recto-vaginal band.

Vagin postérieur = Posterior wall of the vagina. *Bandelette recto-vaginale* = Recto-vaginal band. *Ischion* = Ischium. *Sphincter* = Sphincter *Coccyx* = Coccyx.

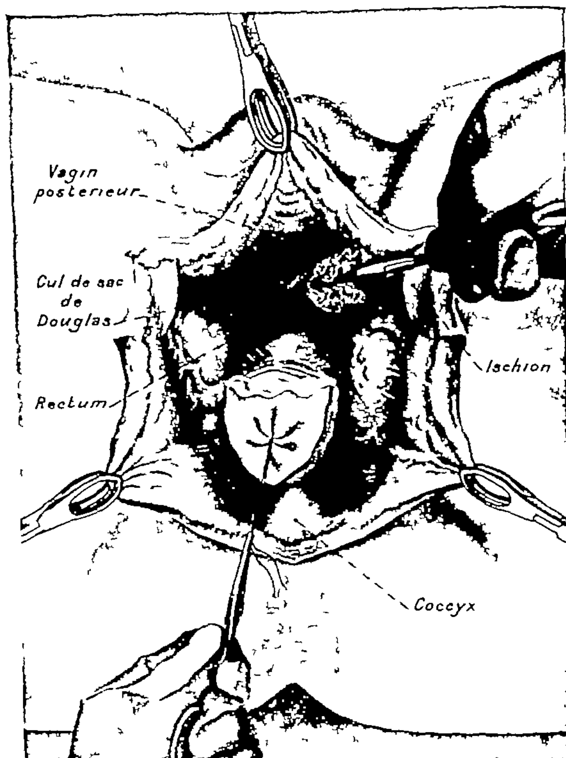


FIG 190 —CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION
Recto-vaginal dissection, which will be prolonged to Douglas pouch, which will not now be opened; this detachment is made by the compress.

Vagin postérieur = Posterior wall of the vagina. *Cul-de-sac de Douglas* = Douglas pouch. *Ischion* = Ischium. *Rectum* = Rectum. *Coccyx* = Coccyx.

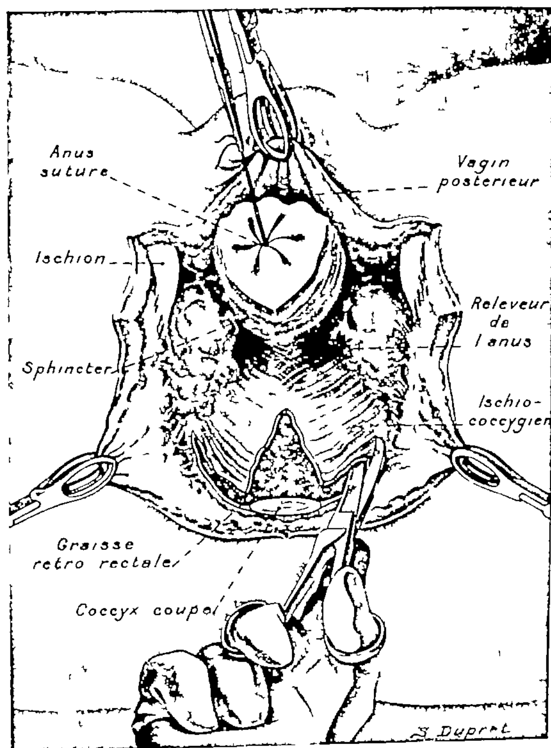


FIG. 101 —CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

Division of the levatores ani.

Anus suturé = Anus sutured. *Vagin postérieur* = Posterior wall of the vagina. *Ischion* = Ischium. *Releveur de l'anus* = Levator ani. *Sphincter* = Sphincter. *Ischio-coccygien* = Ileo-coccygeus. *Graisse rétro-rectale* = Retro-rectal fat. *Coccyx coupé* = Coccyx divided

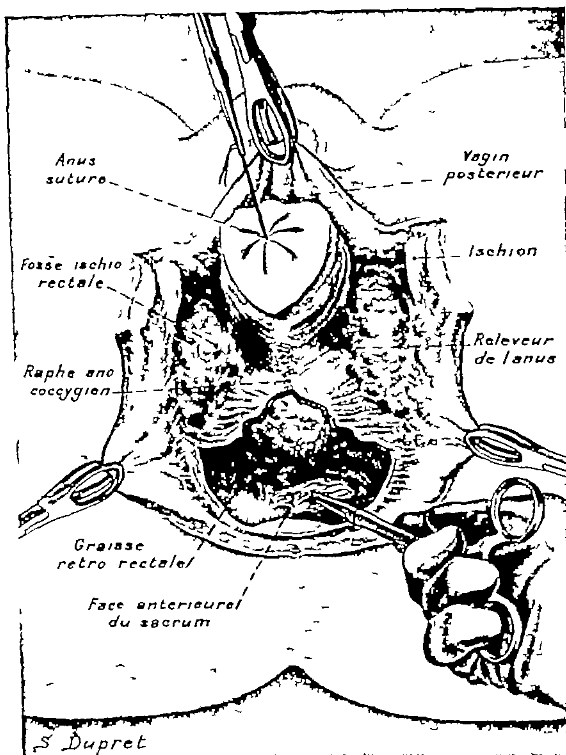


FIG 102.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

Liberation of the hollow of the sacrum up to the promontory. It is made by a compress mounted on forceps.

Anus suturé=Anus sutured. *Vagin postérieur*=Posterior wall of the vagina. *Fosse ischio-rectale*=Ischio-rectal fossa. *Ischion*=Ischium. *Raphé ano-coccygien*=Ano-coccygeal raphé. *Releveur de l'anus*=Levator ani. *Graisse rétro-rectale*=Retro-rectal fat. *Face antérieure du sacrum*=Anterior surface of the sacrum.

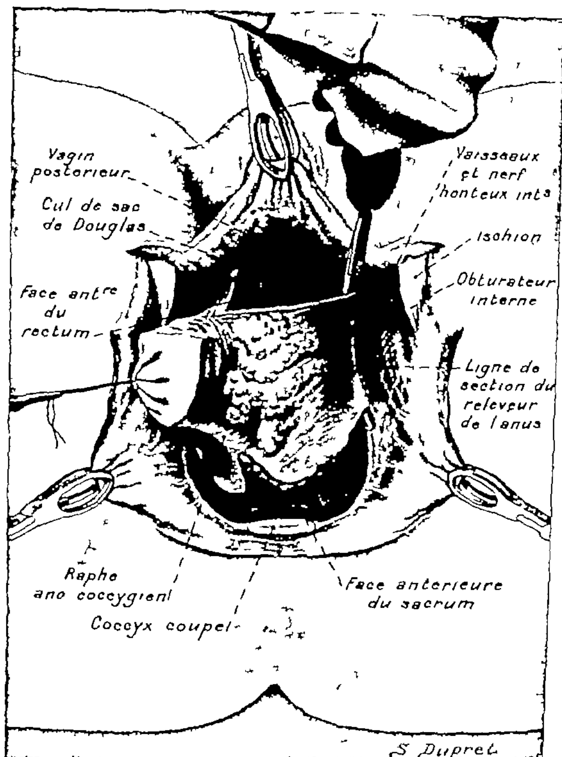


FIG 193 —CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

How the anterior half of the levatores ani are divided; the muscle is separated from its insertion close to the ischio-pubic ramus. Note the ischio-rectal fat remains in contact with the anus and with the levator ani.

Vagin postérieur = Posterior wall of the vagina. *Vaisseaux et nerf honteux ints.* = Internal pudendal vessels and nerve. *Cul-de-sac de Douglas* = Douglas pouch. *Ischion* = Ischium. *Face antre du rectum* = Anterior surface of the rectum. *Obturateur intern* = Obturator internus. *Ligne de section du releveur de l'anus* = Line of division of the levator ani. *Raphé ano-coccygien* = Ano-coccygeal raphé. *Face antérieure du sacrum* = Anterior surface of the sacrum. *Coccyx coupé* = Coccyx divided.

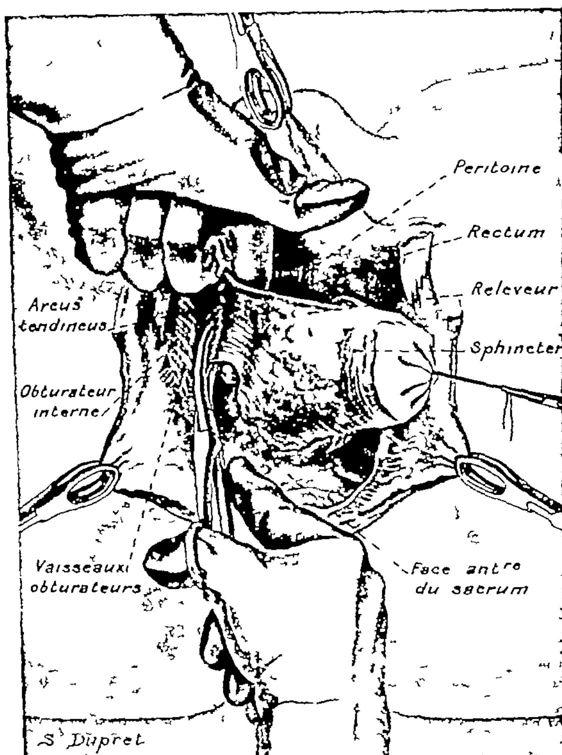


FIG. 104.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

How the levator ani of the left side is divided. The ischio-rectal fat remains in contact with these muscles and will be removed.

Péritoine=Peritoneum. *Rectum*=Rectum *Arcus tendineus*=Arcus tendineus. *Releveur*=Levator ani. *Obturateur interne*=Obturator internus. *Sphincter*=Sphincter *Vaisseaux obturateurs*=Obturator vessels. *Face antre du sacrum*=Anterior surface of the sacrum.

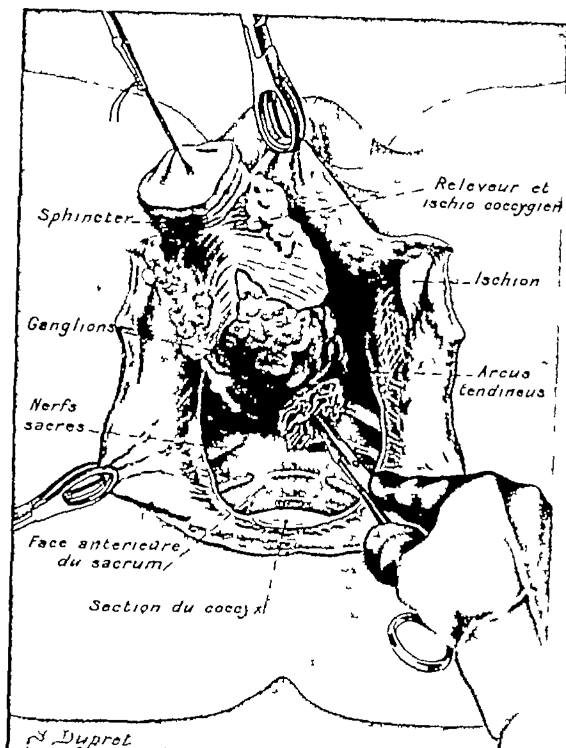


FIG 105.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

How the surgeon empties the hollow of the sacrum. This is continued as high as possible

Sphincter = Sphincter *Releveur et ischio-coccygien* = Levator ani and ileo-coccygeus. *Ganglions* = Glands. *Ischion* = Ischium. *Nerfs sacrés* = Sacral nerves. *Arcus tendineus* = Arcus tendineus *Face antérieure du sacrum* = Anterior surface of the sacrum. *Section du coccyx* = Coccyx divided.

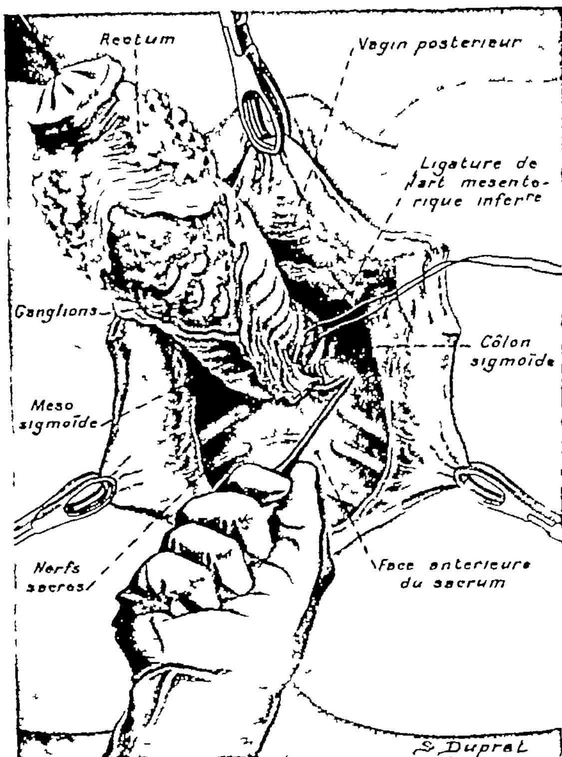


FIG. 106.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

Exposure and ligature of the inferior mesenteric pedicle. Douglas pouch is to be opened in front, permitting lowering of the recto-colic segment. The cellulo-glandular mass remains in contact with the intestine.

Rectum = Rectum. *Vagin postérieur* = Posterior wall of the vagina. *Ganglions* = Glands. *Ligature de l'art. mésentérique inf^{re}* = Ligature of the inferior mesenteric artery. *Méso-sigmoïde* = Meso-sigmoid. *Côlon sigmoïde* = Sigmoid colon. *Nerf sacrés* = Sacral nerves. *Face antérieure du sacrum* = Anterior surface of the sacrum.

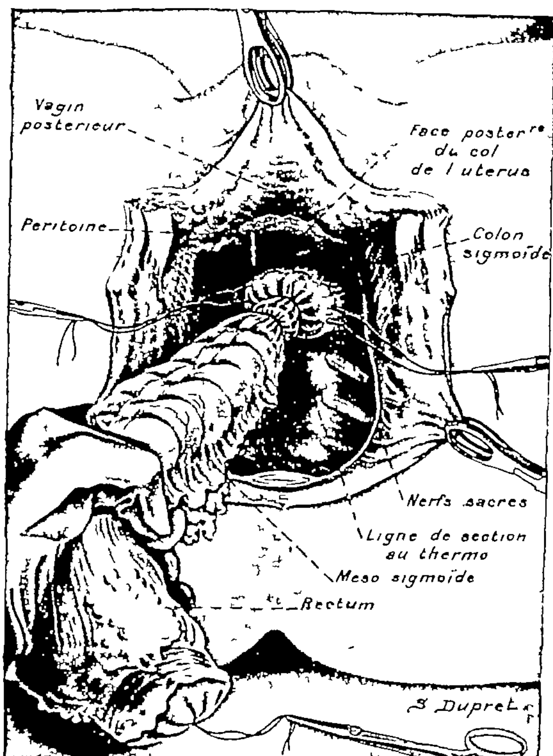


FIG 197 —CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

The intestine is easily lowered directly the inferior mesenteric is cut and the peritoneum opened. The operator draws down as much of the intestine as possible in order to cut it with the thermo-cautery between two ligatures. The upper end will be buried under a *purse-string suture* as an *appendicular stump*. The secretions in the unused intestinal end will be removed by the abdominal anus

Vagin postérieur = Posterior wall of the vagina. *Face postérre du col de l'utérus* = Posterior surface of the cervix uteri *Périton e* = Peritoneum. *Côlon sigmoïd* = Sigmoid colon *Nerfs sacrés* = Sacral nerves. *Ligne de section a thermo* = Line of division by the thermo cautery *Méso-sigmoïde* = Meso-sigmoid. *Rectum* = Rectum.

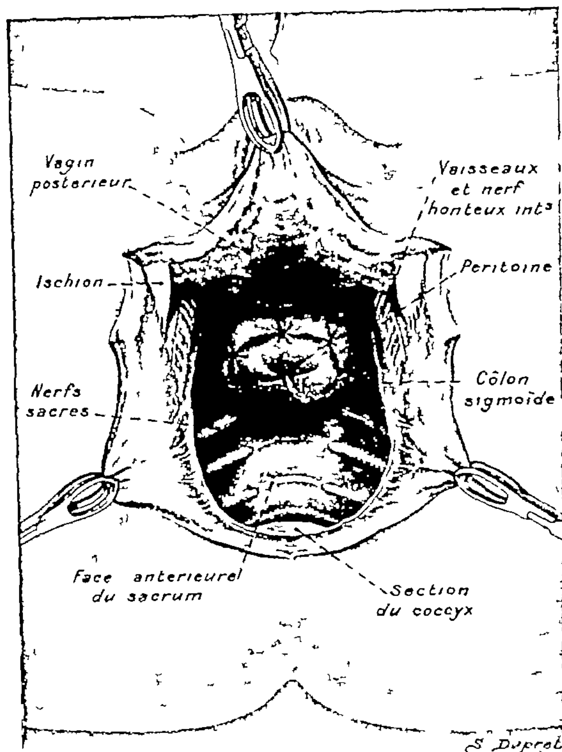


FIG 198.—CANCER OF THE RECTUM IN THE FEMALE. EXTENSIVE PERINEAL EXTIRPATION

Appearance of the operation when finished: the intestinal stump buried. The cul-de-sac of the colon is fixed by some stitches to the peritoneal opening

Vagin postérieur=Posterior wall of the vagina. *Vaisseaux et nerf honteux ints.*=Internal pudendal vessels and nerve *Ischion*=Ischium. *Péritoine*=Peritoneum. *Nerfs sacrés*=Sacral nerves. *Côlon sigmoïde*=Sigmoid colon. *Face antérieure du sacrum*=Anterior surface of the sacrum. *Section du coccyx*=Coccyx divided.

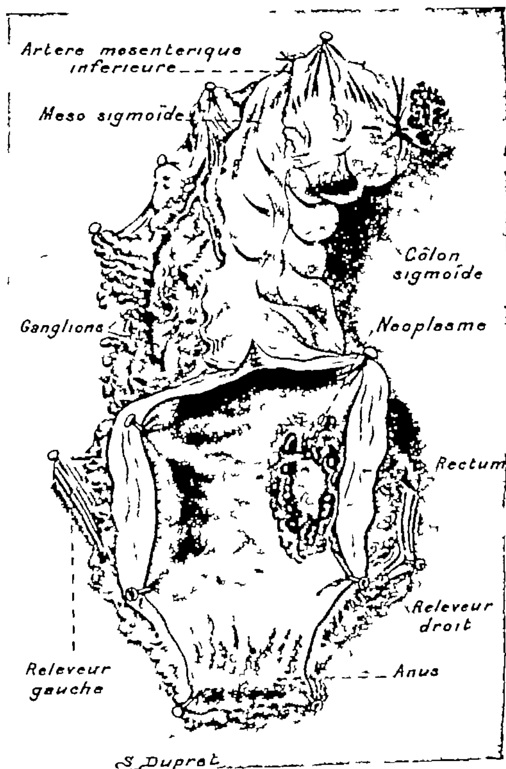


Fig 199.—Cancer of the Rectum in the Female. Extensive Perineal Extirpation

Appearance of the rectum, removed in the present case. When the uterus is adherent it is removed with the intestine. The mass of the cellulo-glandular tissues has remained fixed to the recto-colic segment.

Artère mésentérique inférieure=Inferior mesenteric artery. *Méso-sigmoïde*=Meso-sigmoid. *Côlon sigmoïde*=Sigmoid colon. *Ganglions*=Glands. *Néoplasme*=Growth. *Rec-tum*=Rectum. *Releveur gauche*=Left levator ani. *Releveur droit*=Right levator ani. *Anus*=Anus.